CONNECTING HEALTHCARE – LEVERAGING TECHNOLOGY TO PROMOTE VALUE-BASED CARE IN THE EMERGENCY DEPARTMENT

by

Ahnna M. Jackson

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Dissertation

Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

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Liberty University, School of Business

May 2021

Abstract

The emergency department is a fast-paced and complex environment that serves hundreds of thousands of people a day across the state of Georgia. The establishment of a culture of value-based care in the emergency department is attainable but often falls short when the staff cannot properly leverage the technology available to them. Framed by the Complex Adaptive Theory and The Input/Throughput/Output Model of ED Patient Flow, the purpose of this qualitative case study was to explore how emergency department leaders and staff could better leverage technology to develop and sustain a culture of value-based care. The 30 participants in this study were members of the executive suite, as well as members of the emergency department staff in Georgia. The data were collected through online surveys consisting of open-ended questions. Thematic analysis of the data yielded 5 key themes, including (1) training, (2) time, (3) access to information, (4) troubleshooting, and (5) vendor selection. A key recommendation from this study includes researching the effectiveness of post-implementation health information technology in the emergency department, as it relates to sustaining a culture of value-based care.

Keywords: health information technology, value-based care, emergency department, complex adaptive systems

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Approvals

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Dedication

This degree is dedicated to my father, Michael Roy Cooner, who lived his life in service of others. My father was abandoned by his mother at age 13 and raised by an alcoholic, abusive father until he left home at age 17. He turned to street gangs and drugs for the next 27 years. In June 1988, at age 39, my father turned his life around, started working the Narcotics Anonymous program and spent the next 28 years of his life helping others to live a life in recovery. He passed away in 2017, with minimal possessions to his name, but immeasurable wealth in the legacy he left behind. He did not make it to see me become a doctor, but I promised him I would, and so I did.

I did it, dad.

This degree is also dedicated to my amazingly wonderful and supportive husband, Nevin and our two kids, Amina and Elijah, who stood by me and encouraged me when I wanted to quit. Because of them, I persisted.

Acknowledgments

I would like to acknowledge Dr. Geraldine Rosol, who was my dissertation chair through this process. Her endless words of encouragement, gentle reminders to complete assignments, and positive and continuous feedback helped make this dissertation possible. I do not know if I would be here today, having completed the manuscript without your support.

To all my family and friends who put up with me ignoring them in favor of writing, I thank you for not giving up on me. For encouraging me to continue to push through and see this to its end. I look back on where I started and the childhood I had growing up and would be remiss to not acknowledge my parents Rhonda and Victor, and my sister Joyce. We have all walked a different path, but those paths have led us to where we are now, growing, learning, persisting. Just keep the faith and understand that we have a lot of activities to make up for.

I would also like to acknowledge coffee, as it helped keep me stay awake all those long nights at the table.

And to God, with whom all things are possible. Our faith can move mountains (Matthew 17:20).

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Section 1: Foundation of the Study

In the beginning, there was only trust – trust that the patient had in their healthcare provider that they would receive the best care to diagnose and treat their illness. Over the last few decades, healthcare quality and costs have been in the spotlight. The cost of healthcare has steadily escalated since the creation of Medicare and Medicaid in 1965 (Berkowitz, 2008). Some of the primary goals of electronic health records (EHR) include efficiency in patient care, improvements in quality and safety of care delivered, increased coordination of care and increased access to patient information across care teams (Berkowitz, 2008; Williams et al., 2017). The value of health information technology (HIT) has been recognized across the United States. It has resulted in the government contributing financial incentives to promote the adoption, implementation, and use of HIT systems (Weeks et al., 2015). Research has suggested that hospital administrators play a crucial role in the integration (routinizing and sustaining) of HIT (Stetler et al., 2009; Stetler et al., 2014). However, implementing and effectively using HIT is a complex process as the emergency department staff develops the necessary skills to productively navigate HIT while interacting with patients (Linder et al., 2006). When the hospital administrators understand the healthcare system and the complexities of HIT, there is a better chance for successful implementation and adoption of HIT (Abbott et al., 2014).

Background of the Problem

Health information technology is an invaluable tool in the provision of quality care and enhancement of service delivery among medical practitioners. Technology enables physicians and nurses in emergency departments to have access to patient data and enables them to make informed decisions within an abbreviated time. The use of HIT has improved the quality of care offered to patients while increasing the communication between the providers and the patients

(Alotaibi & Federico, 2017). Despite its extensive usage in hospitals around Georgia, HIT's effectiveness remains a challenge, and the full benefits have not been realized (Association of Health Care Journalist, 2019). The main challenge revolves around the complex nature of information technologies (IT), where users find it difficult to interact with the system due to inferior data quality or limited knowledge of proper use. IT problems can come from system errors or user errors. Research conducted by Kim, Coiera et al. (2017) showed that user errors come from inadequate training as well as a lack of familiarity with the system in use. Therefore, further research in this field will be instrumental in ensuring optimal utilization of HIT by emergency department staff.

Little is known on the impact that user errors have on the clinical decisions made by medical practitioners. One of the areas that require analysis concerning the ineffective use of HIT is practitioners' delayed decision-making (Kruse & Beane, 2018). Another research gap relates to how HIT's interoperability with other systems affects emergency departments and facilities that operate in the area. To address the issue of ineffective use of HIT, it is essential to look at how data are collected, stored, and analyzed, and whether the analytics adopted promote interoperability with other systems (Sheikh et al., 2017).

Problem Statement

The general problem was the ineffective use of healthcare information technology by hospital staff, resulting in a lack of focus on value-based care. Hewner et al. (2018) showed that disintegration of healthcare, poorly managed electronic health records (EHR), and limited access to administrative databases contribute to the lack of value-based care in hospitals. However, ineffective processes utilized by hospital administration to improve the adoption of evidence-based practice and health information technology contributes to the problem. Castner and

Suffoletto (2018) concluded that attending physicians experience an average of six interruptions per hour, with approximately 17% of direct care tasks interrupted, and nearly 20% of interrupted tasks remain uncompleted. Given this, the use of technologies such as analytics and monitoring tools enables healthcare providers to increase efficiency and improve value-based care while improving their decision making and work processes. Studies have shown that healthcare providers are often time-crunched, given the myriad of tasks that are required to be completed, leading to high turnover rates (Karahanna et al., 2019). Fay et al. (2018) studied the effects of having access to adequate supplies and technology and found that having these readily available helped reduce stress in emergency department nurses. Lower levels of stress lead to higher job satisfaction and less staff turnover (Fay et al., 2018). Therefore, the use of healthcare management technologies may be used in the provision of a well-suited form of provider-led care and management, an approach that Jarvis (2016) established would play a vital role in decreasing the rates of employee turnover. The specific problem was the ineffective use of healthcare information technology by hospital staff in emergency departments across Georgia, resulting in a lack of focus on value-based care.

Purpose Statement

The purpose of this qualitative case study was to explore the ineffective use of healthcare information technology by hospital administrators in Georgia's emergency departments resulting in a lack of focus on value-based care. In 2009 the Health Information Technology for Economic and Clinical Health (HITECH) Act became law. Compliance with the requirements of the HITECH Act enforces adherence to adequate care and evidence-based clinical guidelines. Kruse and Beane (2018) conducted a systematic review that discussed and confirmed that “in this review, 81% demonstrated improved medical outcomes in terms of efficiency or effectiveness as

a result of HIT adoption" (p. e41). Healthcare facilities Emergency department serve huge populations daily, suggesting a considerable challenge in their efforts to fulfill the needs of population health effectively (Karahanna et al., 2019). The employment of the right technologies of healthcare management, such as EHRs, promises enormous value in improvements to the quality of healthcare delivered, workflow, costs of healthcare, and the safety of data storage.

Healthcare leadership has a responsibility to manage the delivery of care and the environments, culture, and resources that apply such delivery. An essential aspect of the responsibilities of leadership in a healthcare setting is to influence and cope with change to promote the effectiveness of organizational methods and models in fulfilling emerging needs and achieving desirable health outcomes.

Research Questions

The specific problem was the ineffective use of healthcare information technology by hospital administrators in Georgia's emergency departments resulting in a lack of focus on value-based care. Studies conducted by Nguyen et al. (2017) showed the use of EHRs reduced diagnosis mistakes, saved time, and increased physicians' confidence level. Even with the promising aspects of HIT and EHRs, there are barriers to its successful adoption and implementation. Ben-Assuli (2015) discussed the barriers as computer viruses and crashes, data breaches, malpractice litigations, and other similar concerns. Those barriers aside, there are technological tools available to improve provider-to-provider and provider-to-patient communication and coordination during emergency department care. The use of healthcare information technologies such as wearable Radio-frequency identification (RFID) and EHRs can result in better patient care, ease of workflow, reduction in healthcare costs, and ensure safer data storage (Yazici, 2014). Embracing technology is integral to healthcare as patient needs are

continually changing, and the current technological developments, such as imaging, scanning, and radiotherapy, need to keep pace with those needs. Emergency departments manage high populations daily, resulting in a limited time for healthcare providers to complete their assigned tasks. This challenge has caused high turnover rates among staff members in the emergency department, and the use of information technology has dramatically improved services in healthcare facilities (Karahanna et al., 2019). The qualitative research questions driving this paper are:

- RQ1. What do healthcare administrators perceive as barriers to the effective use of technology in the emergency department?
    - RQ1a. What factors promote the adoption of healthcare information technology?
    - RQ1b. What factors prevent the adoption of healthcare information technology?
- RQ2. How can technology, such as electronic medical records, help providers establish and maintain value-based care in the emergency department?
- RQ3. How can ED clinical leaders utilize the Input/Throughput/Output Model as it relates to information technology to better understand the lack of value-based care in the emergency department based in ED crowding?
- RQ4. How can technology systems integrated into health care practices benefit patients and practitioners?

Nature of the Study

The qualitative case study was most appropriate for this research. The qualitative research designs that one can select for a given study include ethnography, narrative, ground theory, phenomenology, and case study. The ethnography design emphasizes the attitudes demonstrated by researchers; it requires researchers to utilize exceptional observation skills and

take mandatory notes during field assessments (Padgett, 2016). The grounded theory research design is employed when researchers want to understand the approaches used by people to complete various tasks (Padgett, 2016). Narrative design is a form of storytelling used by researchers to convey aspects of their projects packaged in the form of a story, either in the correct chronology or thematically, to be more appealing to the end-user (Creswell, 2014). The goal of this type of qualitative research is to describe a lived experience related to an investigated occurrence. A researcher, in this case, uses a strategy that is directed by personal or other people's sensory perceptions or experiences (Creswell & Poth, 2018). Yin (2009) stated that exploratory case studies answer 'how' and 'what.' Exploratory case studies are also appropriate when the researcher is seeking to gain a deeper understanding of the social phenomenon.

Discussion of Research Paradigms

Various research paradigms like positivism, interpretivism, and constructivism have been used over the years (Berg & Lune, 2012). These paradigms are created as a result of inherent differences in the ontology, epistemology as well as the methodology of different research topics. The positivist research paradigm is best suited for researchers who aim is to potentially foresee the future, to help avoid unfavorable events. Positivism allows the researcher to study and identify the impact of certain variables which led to a particular event (Johnson & Clark, 2006). Interpretivism is the belief that reality is built from the social constructs of humans who apprehend the world through interactive activities (Bryman & Bell, 2019). Their efforts focus on trying to build constructs from the field by conducting an in-depth study involving a particular phenomenon. The constructivist paradigm uses the perspectives of the individuals to try to explain certain phenomenon and establish facts (Berg & Lune, 2012).

The constructivist theory is based on the belief that humans tend to construct their own understanding of different phenomena with the help of their personal experiences (Berg & Lune, 2012). The constructivist theory works well in a qualitative research because it fosters asking open-ended, probing questions about the phenomenon being researched. The constructivist theory also encourages scrutinizing the researcher in the research process, by requiring the research to reflect on all biases in the data and data collection processes (Charmaz, 2017). This theory aligns with the qualitative nature of this study by connecting the critical analysis of the collected data with the lived experiences of people's everyday lives.

Discussion of Design

The focus of this study was to explore leadership decision making when implementing HIT in the emergency department. Quantitative research, as defined by Burns et al. (2015), is a "formal, objective, systematic process used to describe variables, test relationships between them, and examine cause and effect associations between variables" (p. 510). This type of research is best used when the researcher is seeking to find answers by testing hypotheses using objective and impartial methods (Davies & Fisher, 2018). Neither a theory nor hypothesis was tested in this research; therefore, quantitative research was not suitable for this study. Mixed method research uses both statistical, and text analysis and consequently was unsuitable for this study.

Discussion of Method

The exploratory nature of a case study entails examining the interaction of multiple variables presented through documents, quotes, samples, and artifacts; a case can be a person, program, an organization, or a group (Yin, 2009). An exploratory case study provided a deeper understanding of why healthcare information technology is not used effectively to promote

value-based care, which has resulted in increased staff turnover in the emergency department. Patton (1990) suggested that case studies are valuable in creating a deep understanding of particular people, problems, or situations, in comprehensive ways. From an analysis of a single case, one can identify and describe underlying phenomena and uncover new relationships and new perspectives on a topic (Merriam, 1988).

The exploratory focus of this design provided a more in-depth insight into the subject of research and uncover relevant underlying trends. Qualitative methods gather information from the standpoint of the participant and are used to collect data on experiences and phenomena (Hammarberg et al., 2016). Stake (2006) posited qualitative research relies heavily on human perception and comprehension. This study consisted of gathering information in the form of a single case study. The case study method features the researcher's focus on exploring a 'bounded system' (the case) in a period, such that the elements of time and place are specific in the investigation. The researcher focuses on exploring an issue within determined structures (Taylor & Francis, 2013).

Discussion of Triangulation

Triangulation is the use of multiple data sources used in qualitative research to assist in comprehensive understanding of phenomena (Patton, 1990). There are four type of identified triangulations: (1) method triangulation, (2) investigator triangulation, (3) theory triangulation, and (4) data source triangulation (Clark et al., 2014). Method triangulation involves using more than one method for data collection (Bekhet & Zauszniewski, 2012). Using method triangulation complements quantitative data, by providing qualitative insights by using multiple research methods, which is useful in mixed-method research studies (Bowen, 2009). Investigator triangulation is comprised of two or more researchers working on the same project; those

investigators provide multiple observations and conclusions and works well for mixed methods research studies (Archibald, 2016). Theory triangulation uses different theories to interpret and analyze the data (Clark et al., 2014). Data source triangulation is a systematic process for reviewing and evaluation documentation as a data source for the research study (August et al., 2020; Santos et al., 2020). Due to the nature of data collection being anonymous, the researcher used the data source triangulation to substantiate the findings.

Summary of the Nature of the Study

The data were collected through semi-structured survey questions answered by the executive and senior management of healthcare organizations in Georgia, as well as staff members of those emergency departments. The reason behind presenting these questions directly to the executive leaders is due to their positions; they approve or disapprove the decisions to adopt HIT in the facilities. Other senior management includes department heads and shift leaders for the emergency department. These individuals are directly affected by the commitment to use such technology. Commitment to using HIT directly affects the emergency room department heads and shift leaders. Survey responses from executive and senior management will assist in exploring the decision-making process when adopting HIT. The survey responses from department heads and shift leaders will explore the implementation and effectiveness of approved HIT in the emergency department.

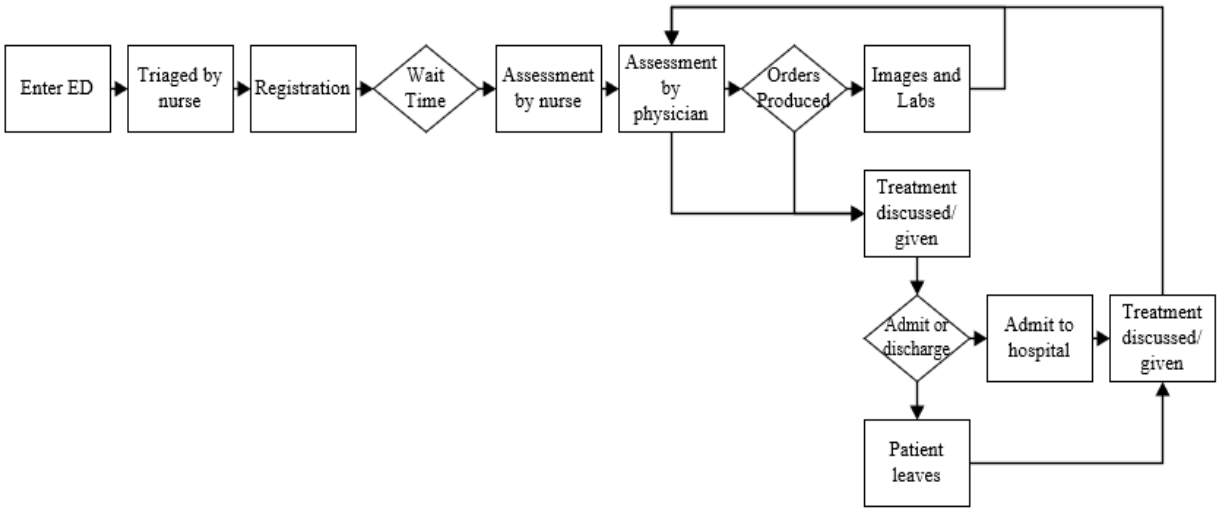
Conceptual Framework

While technology enhances numerous aspects of healthcare, there exist barriers that limit its adoption in several healthcare settings. For example, although EHRs offer advantages, their cost is prohibitive to small facilities. Healthcare facilities that serve huge populations can, nonetheless, benefit immensely from innovations such as HIT. The current framework, as shown

in Figure 1, depicts the traditional flow of a patient entering the emergency department through discharge and leaving the emergency department.

Figure 1

The Traditional Flow of Patients Through the Emergency Department



The frameworks used to guide this research were the complex adaptive systems (CAS) and The Input/Throughput/Output Model of ED Patient Flow developed by Asplin et al. (2003). These theories support the Value-Based Healthcare Model to frame the problem of ineffective use of healthcare information technology by hospital administrators in Georgia's emergency departments.

Concept 1

Optimal patient flow minimizes waiting and is a fundamental sign of quality healthcare. Crowding at the Emergency Department (ED) indicates inefficient patient flow and requires proper intervention, which has become a significant barrier to adequate healthcare for all ED admissions (Asplin et al., 2003). A study conducted by Vile et al. (2017), demonstrated that administrations within healthcare institutions could solve patient flow problems by prioritizing

the issue and ensuring all aspects causing reduced patient flow are addressed. The Input/Throughput/Output Model of ED Patient Flow developed by Asplin et al. (2003) provided a practical framework from which administrators, researchers, and policymakers can better understand the lack of value-based care in the emergency department.

The input component of the framework is represented by all services that factor into emergency department operations from clinical support staff to imaging services (Asplin et al., 2003; Leviner, 2020). During this component, data generated is collected and moved forward from previous emergency department visits (Khalifa & Zabani, 2016). The triage staff can conduct a thorough review of the information that exists in the system and update what needs to be changed, this cuts down on input time. The throughput component of emergency department visits is represented by the length of time taken from triage to disposition (admitted or discharged) and consists of the treatment received during the emergency department stay (Asplin et al., 2003; Vanbrabant et al., 2019). This is the stage where the impact of effective HIT use can yield the most results. Data generated from electronic records is analyzed to detect chronic symptoms and initiate early interventions. The pressure of managing high daily populations can cause burnouts among healthcare providers, leading to a decrease in the quality of care received. However, such challenges can be easily eliminated by using automated systems to perform a specific task within a limited time (Williams et al., 2015). The use of information technology can significantly reduce the high staff turnover caused by burnouts, thus, improving services at the ED. The output component is represented by the amount of time taken to admit or release patients, which resulted in a bottleneck effect with onboarding new patients to hospital admittance or new patient evaluations in the emergency department (Asplin et al., 2003).

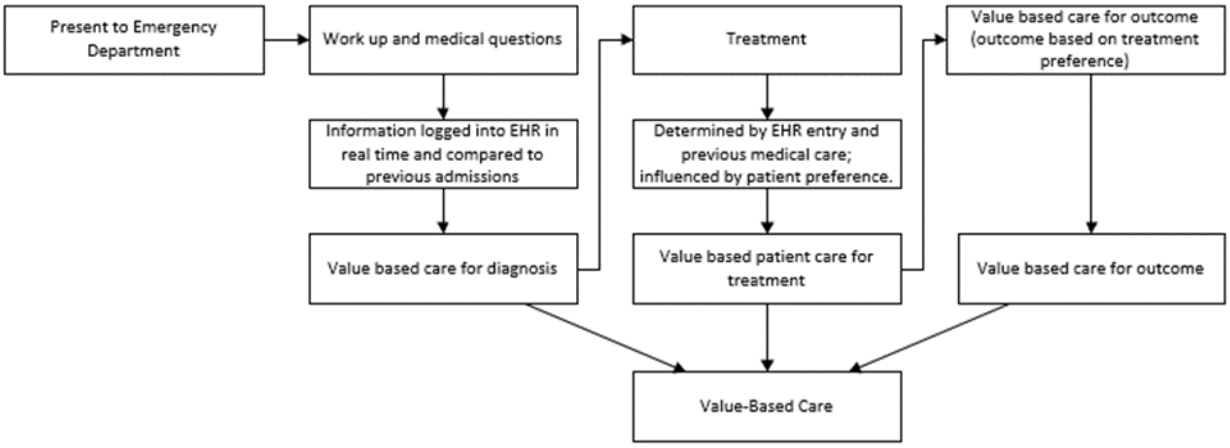
The second and third components of this framework are justification for the effective use of HIT. HIT allows for increased quality of care at a decreased cost. Factors such as easy access to patients' information can help physicians make quicker, better clinical decisions (Kamal et al., 2018). Specifically, EHR is ideal for storing comprehensive patient data that can be easily shared by healthcare providers. Using modern technology, hospitals can create a single patient record and then connect their other healthcare services, thus making it easier to coordinate all healthcare features. When used appropriately, EHR improves communication and general coordination of care, which results in better decision-making by health specialists and improved patient outcomes (King et al., 2014). Medical errors are reduced significantly since the system stores updated data that function as a reliable reference point at any time.

Healthcare facilities are increasingly recognizing the need to streamline the work process within the ED using emergency department information technology, such as an automated charting system (Moja et al., 2014). Figure 2 shows how the hospital can redesign the patient flow through the emergency department, with an increased focus on value-based care. First, refocusing the initial interaction between the patient and the triage team will take work. The initial interaction of gathering information, comparing it to previous medical information, and entering new information ties directly into creating value-based care for diagnoses. Secondly, the emergency department staff will consult EHR information and discuss treatment options based on history. At this level, the staff and the patient will determine treatment options and preferences. By involving the patient in their treatment plans, the patients have higher confidence in their outcome and a lower chance of recurring concerns (Shay & Lafata, 2015). The second step ties directly into value-based care for the delivery of treatment. By refocusing the initial and

secondary steps, the overall interaction increases value-based care during the patient visit to the emergency department.

Figure 2

Value-Based Healthcare Patient Flow



Concept 2

The Value-Based Healthcare model was developed to provide insight into delivering the best possible course of healthcare while considering patients' needs and values (Ibanez-Sanchez et al., 2019). Simply put, the object of The Value-Based Healthcare model is to provide the best outcome using the least number of resources (Santana et al., 2018). HIT can support value-based care by delivering relevant and actionable information to the right person in the right place at the right time (Hewner et al., 2018). However, until the benefits of HIT are fully recognized, healthcare providers will continue to struggle with increased documentation, workarounds, and lack of communication, resulting in staff burnouts, which affect the value of care given (Hewner et al., 2018). Integrating established quality improvement measures into the redesigned technology-enabled healthcare systems can help to achieve the goal of value-based care.

Theories

The complex adaptive theory (CAS) theory was initially developed in a biological setting where individual agents interact and self-organize to emerge as an interdependent complex system (Kauffman, 1993; Welsh, 2014). The CAS breaks down the individual components of a complex system, how these systems interact, how these systems change and adapt over time (Ekboir et al., 2017; Lorden et al., 2014; Sturmberg et al., 2014). The advanced nature of HIT, such as highly coordinated electronic health records (EHR), are comprised of random and symbiotic relationships with nonlinear responses. Commonly occurring deviations from the norm (Abbott et al., 2014) must have the ability to self-organize, adapt, and evolve with their environment (Wang et al., 2015).

Actors

Healthcare Leaders – Executive Suite. A leader is defined as one who leads, influences and engages a group or team to accomplish goals and missions (Lateef, 2018). Healthcare leaders are integral to this research study because they play an important role in deciding what HIT systems are chosen and implemented in the healthcare facility. The focus of this study was technology in the emergency department, as such, data were collected from the leaders of healthcare facilities across Georgia. These leaders include executives and department heads such as vice president of operations, chief quality officer, vice president of patient care, chief information officer, chief financial officer, and others.

Emergency Department Staff. The staff members of the emergency department are also integral in understanding the phenomena of technology in the emergency department because these are the people that interact with this technology after it has been implemented. The focus of this study was technology in the emergency department, as such, data were collected from the

leaders of emergency departments across Georgia. These are the end users that can provide a direct insight to what helps or hinders them from using the technology in everyday setting. The emergency department staff includes medical assistants, lab technicians, nurses, physicians, and others. The involvement of the end-users during the technology building and implementation phases increases the likelihood of adoption and effectiveness in the immediate timeframe after rollout (van Deen et al., 2019).

Relationships Between Concepts, Theories, and Actors. Successfully transitioning a patient from the emergency department back to their home is a complex task that requires multi-department coordination. Understanding the complexities of the system helps emergency department staff effectively move the patient through the input/throughput/output phase of an emergency department visit. This research relates the CAS framework and the input/throughput/output model by exploring the interconnectedness and multidisciplinary interactions required for the system to function together. When the healthcare leaders can articulate to the staff the importance of the technology, and provide as much communication as possible, there is a greater chance of technology acceptance. When the emergency department staff takes advantage of the full capabilities of the healthcare system, the team provides the patient with value-based care in the emergency department.

Summary of the Research Framework

The complexity of the emergency department requires an examination of the forces that affects change within the department. Implementing HIT requires healthcare leaders to face the challenge of linking medical practices with technological expertise, with a focus on the interaction between the hospital stakeholder and its technology (Sligo et al., 2017). To effectively implement and use HIT in the emergency department is dependent on minimizing the

perceived barriers by understanding the interrelatedness of the hospital components (Sligo et al., 2017). Understanding how the systems work with each other enables better communication between staff, leading to a reduction in burnout and promoting value-based care in the emergency department (Cabilan & Eley, 2015).

Definition of Terms

Complex adaptive system (CAS): The CAS relates to a group of components often acting in unpredictable and nonlinear ways without external supervisory influences and is comprised of a network of interactive, interconnected process of a complex system (Sturmberg et al., 2014).

Electronic Health Records (EHR): an electronic version of a patient's medical history, which is maintained by the provider over time, and may include all of the key administrative, clinical data relevant to that persons care under a particular provider, including demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports (Centers for Medicare and Medicaid Services, 2012).

Health Information Technology (HIT): information processing system involving the hardware and software used to store, retrieve, share, and analyze healthcare data (Yen et al., 2017).

Health information technology for economic and clinical health (HITECH): The HITECH Act refers to the legislation authorizing the Department of Health and Human Services (HHS) to establish programs to promote improvement in the safety, quality, and efficiency of healthcare delivery through the adoption of HIT such as EHRs and RFID (Witten, 2018).

Radio-frequency Identification (RFID): technology that uses radio waves to identify people or objects. The device reads the information contained in a wireless device or "tag" from

a distance without making any physical contact or requiring a line of sight (Homeland Security, 2009).

Value-based healthcare: Under the Patient Protection and Affordable Care Act (PPACA) of 2010, value-based healthcare was defined as a model in which providers, including hospitals and physicians, are paid based on patient health outcomes (Burwell, 2015).

Assumptions, Limitations, and Delimitations

The assumptions, limitations, and delimitations established the contextual boundaries of this study. Assumptions are evidence accepted as true or expected to happen, but the researcher cannot prove them. Assumptions are intuitive, and researchers must address assumptions to avoid drastically altering the results of the study. Limitations are areas of the research that may be flawed, which could be the result of too small sample sizes or unavailability of necessary resources. Delimitations are areas of the study that the researcher can control.

Assumptions

Assumptions in the research are thoughts or theories that are assumed to be true to the researcher or reader in the absence of proven theoretical evidence (Schoenung & Dikova, 2016). In this study, I assumed executive staff and emergency department staff would be willing to participate in the study. The second assumption of this study was that the participants would be knowledgeable about the decision-making process regarding HIT acceptance, implementation, and use. The last assumption made was that the participants' experiences from their perspective of HIT acceptance, implementation, and use would describe the explored phenomenon. For each of these assumptions, I ensured voluntary participation and anonymity of participants. Participants were assured that they could withdraw from the study with no implications.

Limitations

Limitations are characteristics in the research that are disadvantages that may threaten the validity of research findings (Ellis & Levy, 2009). Because this research study is specific to the perceptions of the emergency department staff, it has limitations. This research study was limited to the executive staff and clinical and administrative leaders of the emergency department of hospitals across Georgia. Potential limitations of this study could relate to the sample size of the study. Small sample sizes could limit the generalizability of the research findings.

Delimitations

Ellis and Levy (2009) identified the delimitations of a study as characteristics that constrain the scope of the research into a more manageable study and enable the reader to understand the boundaries of the study. To make this study more manageable but maintain the validity of the study, the participants of this study were limited to the executive staff and emergency department clinical and administrative leaders. The reason for working directly with the executive leaders is due to their positions; they approve or disapprove the decisions to adopt HIT in the facilities. Other senior management includes department heads and shift leaders for the emergency department. These individuals are directly affected by the commitment to use such technology. This study included an in-depth exploration of the decisions used to determine what HIT is accepted into the emergency department and how the staff will implement the use in their emergency departments in Georgia. All other healthcare specialties and entities were excluded from this study.

Significance of the Study

This research may fill a gap in understanding by explicitly focusing on the emergency department. This study is unique because it will address the under-explored topic of how

effective use of HIT in the emergency department improves the delivery of life-saving healthcare. Past research demonstrated HIT has improved the delivery of care across different sectors of healthcare but failed to focus on how it impacts healthcare delivery in the emergency department.

Reduction of Gaps in the Literature

The implementation of EHR supports the needs of many stakeholders in the healthcare arena, including doctors, patients, clinical staff, insurance companies, and policymakers (Aminpour et al., 2014). Some of the limitations reflected in this study include poorly managed electronic health records, limited access to administrative databases, disintegration of the healthcare, interruptions of the attending physicians, high staff turnover rates, computer viruses and crashes, malpractice litigations, and the ineffective processes utilized by the hospital administrators to improve the adoption of evidence-based and HIT. However, this study explored the solutions to be implemented to reduce the gaps between information technology and value-based care in the emergency care department.

Firstly, the use of EHRs in the emergency department ensures quality and safer care for patients (Meeks et al., 2014). The technology equally reduces mistakes accompanied by diagnosis, facilitates the process of obtaining relevant information according to patients' records at the point of care, enhances communication with the patient and other clinicians, and reduces medical errors (HealthIT.gov, 2019). Practitioners should be familiarized with the EHR system to ensure accurate and safer medical records that contribute to the delivery of value-based care. Secondly, leadership is very crucial in ensuring the adoption and implementation of value-based care in the emergency department. The leaders are tasked with managing and overseeing all medical activities to provide high-quality care delivery to all patients.

Similarly, they ensure adequate supply and availability of technological tools used in the event of delivering care. The adequate supply of technological tools reduces stress in the emergency department physicians, thus enhancing job satisfaction, less staff turnover, and improved work processes, which results in better healthcare services rendered. Additionally, the provision of advanced technological tools improves communication between providers and provider-to-patient. Lastly, compliance with the HITECH Act by the emergency department ensures adherence to adequate healthcare and evidence-based clinical guidelines. The Act aims at improving the model of healthcare delivery as well as the patient's service (Witten, 2018).

Implications for Biblical Integration

Biblical integration is an essential spiritual aspect in the medical field that facilitates the achievement of value-based care in all healthcare sectors. Human beings have spiritual needs that are intrinsic throughout their lifetime. These intrinsic needs entail beliefs and connection with God based on His manifestation in human life (Toker & Çınar, 2018). Based on these spiritual beliefs, treatment is more likely to be effective in individuals whose spiritual needs are met in the process of healthcare delivery. Although medical practitioners find it challenging to satisfy patients' spiritual needs, it is vital in facilitating the healing process once the patient feels connected with God, thus improving value-based care. The benefit of having spiritual guidance has been undervalued in terms of decision making, patient participation, and overall care received (Rego et al., 2020). For instance, as illustrated in Mark 5: 25-34, the woman who had suffered a bleeding plague for a couple of years believed that upon touching Jesus' garment, she would receive healing. Through faith, she received healing; her spiritual needs were met amidst her time of pain. Therefore, emergency medical practitioners need to satisfy the spiritual needs of patients through the formation of mutual relations with the patient and the provision of the

necessary conditions for patients' connection with God. This psychological phenomenon facilitates the healing process, thus the enhancement of value-based care.

The emergency department physicians need to embrace the compassionate attribute that will help them to incorporate ethics and spirituality in the process of healthcare delivery to reinforce the adoption and implementation of value-based care. This attribute is critical in the emergency scenario, where there is heightened urgency and crowding. That setting calls for the physician's intervention to redeem the life-threatening situation tactfully. At this stage of medical care, the physician needs to engage the patient's aspects of life, including physical, emotional, spiritual, and social, to achieve better outcomes. A compassionate physician is better placed to deliver value-based care, since they can meet the entire needs of the patient, including spirituality. Biblically, it is evident that compassion results in better health, as demonstrated by Jesus when He restored the sight of the two blind men in Jericho as recorded in Matthew 20: 29-34 (New American Standard Bible, 1960/1995). Jesus was driven by compassion to ensure the well-being of the two men. Therefore, to provide effective value-based care in the emergency department, medical attendants should be compassionate.

Biblical Integration in Healthcare Technology. God continues with His creation through technology and innovations developed by human beings. Whereas health professional's advance treatment schedules to patients, God remains the healer in whose absence, the efforts of physicians have no value (Mokyr et al., 2015). As such, God is the ultimate healer and uses the knowledge of the doctors advanced through the science of medication and other medical procedures to render His healing. Healthcare information technology is a model that enhances the quality of healthcare in hospitals. Many religious experts assert that the technological advancements in the medical sector are a significant creation of God in His design to reduce the

suffering of His people (Mokyr et al., 2015). Therefore, God advances positive knowledge and guides innovators into designing and developing technology for application in the healthcare sector.

However, the Christian perspective of the parable of talents suggests that human beings should be good stewards of what they receive. The parable advocates for optimization of the return on investment in every setup of life. Therefore, every investment in the world has a level of return projected on it. Aßländer et al. (2016) stated that despite the value to human life by limiting the longer duration of pains or suffering and preventing the likelihood of early death, technology in healthcare especially in the emergency department should attract a cost. The cost would support items such as setup, developments, maintenance, and in the long-term, calculated as returns on the investment scheduled by proprietors. According to Aßländer et al. (2016), stewards call for the protection and proper management of God's resources or investments under once control. Likewise, apportioning value to be used on technological equipment in healthcare means protecting God's creation achieved through science to support human life.

Leadership Effectiveness and Decision-Making. The competitiveness and sustainability of firms depend significantly on the leadership styles that leaders embrace. If leaders listen to employees, emphasize people's development, establish a culture of wellness, and prioritize humility, companies experience high productivity, reduced turnover, and increased sales and revenues (Donnelly, 2017). Effective leadership and decision-making should be based on Christ-centered values, meaning leaders should be servants and take actions aimed at the common good of people.

The Biblical worldview emphasizes servant leadership. A leader should not be led by self-interests, such as greed for power and money. Instead, as Jesus told his disciples, "whoever

wants to become great among you must be your servant, and just as the Son of Man did not come to be served, but to serve, and to give his life as a ransom for many" (New American Standard Bible, 1960/1995, Mathew 20:26-28). It implies that a leader must practice servant leadership for him or her to be effective. According to Mahapatra and Virani (2017), such leaders establish genuine trust, affection, and emotional support among subordinates. Their leadership style is characterized by love, integrity, honesty, and concern for others. In every decision servant leaders make, they integrate workers' opinions, leading to all-inclusive decisions. Effective leaders should be stewards of Biblical teachings by being impartial and considerate of everyone in all their actions.

Overall, leaders must endeavor to be Christ-like for them to be effective. Jesus did not despise any person based on gender, skin color, or socioeconomic status. Instead, he was a servant to all people. Similarly, leaders should exercise servant leadership and aim to promote the well-being of their followers. They should listen to workers and consider the latter's' opinions when making decisions. In this way, leadership would reflect the Biblical worldview, and firms would become more productive, competitive, and sustainable.

Benefit to Business Practice and Relationship to Cognate

The degree I pursued was in business, with a healthcare management cognate. As disciplines, business and management involve the activities of the organization, analysis, and planning, targeting diverse types of business operations. The core of these disciplines relates to the application of fundamental skills for the efficient running and management of organizations. Management features the administration of organizations, involving the setting of strategies to meet emerging needs and coordinating different resources, including human, technological, and

financial resources, to enable the accomplishment of objectives. It involves the identification of objectives and the manipulation of resources to contribute to the organization's success.

Healthcare management has been defined as the leadership which provides direction to healthcare organizations, including the divisions and departments within the organization (Buchbinder & Thompson, 2010). The role of healthcare management is to ensure that healthcare organizations or systems coordinate available resources in ways that can facilitate the achievement of set objectives. This role of healthcare management relates to the focus of the proposed study in terms of efforts to improve the services that healthcare systems offer, to achieve objectives such as improvements in patients' health, reduction of the incidence and effects of chronic diseases, and evidence-based improvements in the quality of patients' lives. This means this degree relates to the focus of the study in terms of the role of management/leadership in organizations to address the problems of organizational performance. The focus issues in the study (high staff turnover and a lack of focus on value-based care) are issues of organizational performance that are the responsibility of management to address to influence organizational success.

The results of this study provided insights into better implementation and use of HIT in the emergency department. When administrators are not adequately informed on the benefit of effective HIT and emergency department staff is not accustomed to the complex nature of HIT, high user errors negatively impact the quality of care provided to patients (Bardhan & Thouin, 2013). HIT, according to Brooks (2019), is an electronic health system that stores, shares, and analyzes essential medical information to enable efficient management of patients' data. The lack of skills and proper knowledge concerning HIT fails the sole purpose of this technological system, thus eventually resulting in poor care delivery. Therefore, thorough training on the

usability of HIT by the administrators is needed to make timely, informed decisions that add value to patients.

HIT includes technology like EHR and wearable RFID. These technologies are designed to ensure the achievement of better patient care, ease of workflow, and safer storage of medical reports. Merging of these healthcare technologies allows interoperability with other systems in the department for consistent and accurate patients' data across all healthcare units. With the high rate of technological advancements, the policymakers in the healthcare department need to make informed decisions and adopt the right technologies for future purposes (Hemmat et al., 2017). Keeping up with technological advancements is key in ensuring quality and safer care delivery, thus reinforcing value-based care.

Summary of the Significance of the Study

The aim of this qualitative case study was to analyze the importance of knowledge, skills, and ability to implement and effectively use HIT to improve healthcare delivery in the emergency department. The ED staff will benefit through access to an adequate supply of the technological tools that relieve stress and improve work processes in the emergency department. The use of EHRs will enable physicians to quickly access the patient’s information at the point of care. Patients will similarly benefit through receiving timely and safer care during emergency cases with the implementation of value-based care. Additionally, the patients will be able to communicate efficiently with their physicians through the EHR system.

A Review of the Professional and Academic Literature

The purpose of this review of academic literature was to explore the ineffective use of healthcare information technology by hospital administrators resulting in a lack of focus on value-based care. A review of the academic literature provided a greater understanding of the

complexity involved in HIT adoption and implementation and explores proven strategies for the successful adoption and implementation of HIT. An in-depth review of scholarly articles was conducted to determine what contributes to and hinders the successful application of value-based healthcare HIT in the emergency department. This literature review also covers the conceptual models of CAS and Input/Throughput/Output models and how they relate to the value-based healthcare model. The healthcare environment is a complex system requiring multidisciplinary interactions and interconnectedness for the system to function (Bircher & Kuruvilla, 2014).

The ED is a fast-paced environment where the staff works with a wide range of cases, including everything from a rolled ankle to a full stroke, trauma, and motor vehicle accidents. No matter how major or minor the reason for the emergency visit, each patient will require specialized care based on their symptoms and conditions. With this wide range of unpredictable emergencies, the ED must be prepared with a skilled workforce and the right technology to speed-up the provision of medical treatment to stabilize as many cases as possible with every tick on the clock.

A search of key terminology relating to the comprehensive body of literature discussed in this chapter included seminal works as early as 2003, and peer-reviewed articles as recent as 2020. Of the 179 references, 152 (85%) were peer-reviewed journals. The remaining 27 sources (15%) were books and governmental and educational websites. Of the 152 peer-reviewed references, 121 (80%) were peer-reviewed articles from 2015-2020. Keywords used in the literature review search included electronic health records, electronic medical records, health information technology, adoption of health information technology, barriers to the adoption of health information technology, emergency department staff, perception of health information technology, value-based healthcare, complex adaptive systems, crowding in the emergency

department, and input/throughput/output in the emergency department. The main academic databases used included BioMed Central, DOAJ, EBSCOHost, Emerald Insight, Gale, ProQuest, PubMed Central, ResearchGate, SAGE Journals, and ScienceDirect.

Business Practices

Technology in the Emergency Department. There is a global consensus that the implementation of HIT in the ED assists in the capture and analysis of data used in patient-centered healthcare (Karahanna et al., 2019; Kumar & Mostafa, 2019). HIT is becoming increasingly important as patients seek one-on-one care when visiting the ED (Selck & Decker, 2016). HIT is a broad term that encompasses computerized clinical sub-systems, all working together to streamline the flow of information and resources among health providers and users. These sub-components may include electronic health records, clinical decision support (CDS), computerized physician order entry (COPE), health information exchange (HIE), and laboratory information systems (LIS). As the healthcare industry adopts the use of sophisticated IT systems, the use of HIT in the ED is likely to draw the attention of the hospital leadership as its implementation will become an integral part of healthcare. Knowing how HIT affects efficiency levels of the ED is vital. A thorough review of the literature identified common barriers to the acceptance of HIT, such as health records system interoperability, access efficiency, abuse of HIT, and cost of implementation and training (Kruse et al., 2016).

Successful integration of healthcare information technology within emergency departments depends on, among many factors, the attitudes of nurses and physicians towards specific medical information technology. Healthcare professionals are likely to embrace a HIT depending on their thoughts and perceptions regarding their effects, usefulness, ease of use,

subjective norms, and knowledge of computer use. Hospital administrators must consider these factors when making purchase decisions linked with medical technologies.

Barriers to Acceptance of Technology. Even with the incentives and assistance offered by the Federal Government and Centers for Medicare and Medicaid Services, by the end of 2016, only 80% of non-federal acute care hospitals with a functional ED had adopted any type of EHR system (HealthIT.gov., 2017). This section of the literature review discusses some of the major barriers identified through research. The barriers discussed are in no order of frequency or significance.

Access to Health Records – Interoperability. One of the major barriers to implementing and effectively using HIT is the lack of interoperability between systems. Interoperability is the ability of HIT and EHR systems to permit information sharing and exchange between two or more structures or service providers. This concept focuses on the interactions and communication between applications and systems, as well as information processing and management. Interoperability improves system efficiencies to enhance workflows. It also optimizes physician access to the required information at the right time to improve decisions and improve the quality of care (Bhartiya et al., 2016). Nevertheless, achieving interoperability with health information technologies is quite challenging because different vendors manufacture the software and hardware used by these computerized systems. Most suppliers operate on the tenets of competitiveness and not collaboration, which is an essential element of interoperability.

HIT systems established across different healthcare facilities often employ incompatible technical and semantic standards, which leads to data integration problems (Rhodes, 2016; Vile et al., 2017). Each facility develops EHR standards in different languages and across different

technology generations. Denmark addressed this lack of interoperability across EHRs by committing to one EHR standard across an entire region, which provided valuable communications and effective healthcare to its patients (Kierkegaard, 2015). Semantic interoperability is essential for the accurate sharing of HIT to enable coordination of care and delivery of value-based care to the patient (Yang et al., 2019).

Most healthcare providers are often reluctant to pursue interoperability with hospitals outside their chains because they fear to lose their clients to competitor firms. With interoperability, clients can quickly transfer their medical records and change service providers without incurring high costs or losses. This behavior is prevalent among large companies that do not want to lose their patients to low-cost, smaller businesses. Bhartiya et al. (2016) identified data security as an impediment to the successful integration of the concept of interoperability in healthcare. Companies must identify those groups of people who are worthy of accessing pieces of confidential information, the amount of data they will obtain, and methods to be used in sharing this data without triggering unauthorized access.

Defining accountability is another issue of concern given the dynamicity of physician roles within hospital settings. For example, sometimes, doctors assume the position of specialists while at other times, they only serve as primary caregivers (Bhartiya et al., 2016). This changing role-capacity introduces complexities on matters of authorization and access to specific patient personal information.

The choice of clinical terminologies when feeding medical data into the HIT systems during the preliminary patient assessment is also a problem linked with health records. One doctor rarely treats patients when they visit the hospital; multiple providers usually see the patient. A new primary caregiver relies on the data and notes written by former doctors to

understand a patient's medical history and condition and make deductive conclusions and diagnosis. Clinical terminologies were introduced within the medical realm to improve communication between stakeholders and to ensure information accessible to different people, nurses, physicians, and other end-users, with its stable meaning intact. These systems help to achieve semantic interoperability. Leza and Phiri (2019) defined semantic interoperability as the process of "ensuring that the precise meaning of exchanged information is understandable by any other system or application not initially developed for this purpose" (p. 557).

Using ambiguous statements and terms that are only understood by a physician is quite common, and it inhibits seamless information transfer. Besides, doctors often must enter patient data as fast as possible and with great accuracy when using HIT and EHR systems. Chances of using terminologies and abbreviations that make sense to self or a handful of people is likely to capture as much information as possible (Leza & Phiri, 2019). Poor interpretations during retrieval reduce the quality of care by increasing medical errors during diagnosis and reducing the effectiveness of adopted medical practices.

Nevertheless, interoperability is a fundamental element if EHR systems are to achieve their widely proclaimed benefits of coordinated care, better service quality, and reduced costs of delivering standard healthcare to populations (Bhartiya et al., 2016). Therefore, hospitals and other healthcare service providers must invest in HIT to ensure that the erected systems prioritize interoperability irrespective of the vendor, area of operations, and type, and size of the organization. Once interoperability is in place, access to HIT is granted to the emergency department healthcare staff to facilitate appropriate clinical decision-making. Castillo (2019) observed that to accomplish this, the ED staff, including nurses, clinicians, physicians, and all other medical specialists, require instant access to protected health information (PHI). In most

emergency cases, it is challenging to acquire data from the patients to develop a clear picture of the patient's medical history. Limited access to health history means the healthcare provider has no history on which to base the delivery of emergency medical care.

Access to Health Records – Efficiency. Efficiency in terms of HIT adoption is difficult to quantify. Much like interoperability, efficiency has varying forms of measurements, each healthcare facility has its own determination of what efficiency is to them (Codling, 2018). Multiple studies suggested that HIT such as EHRs improve efficiency in the ED (Wong et al., 2018; Zikos et al., 2014); while other studies indicated that EHRs had no impact or a negative impact on efficiency in the ED (Perry et al., 2014). Boonstra et al. (2014) argued that availability and reliability are not the only required measures; the HIT system must be user friendly and efficient in allowing the healthcare staff to provide value-based care. Efficiency, as noted by previous authors, also includes speed, availability, and a lack of system failures (Farre et al., 2019; Lawton et al., 2017). When HIT meets all those standards, the efficiency and speed in which the ED staff diagnoses and treats the patient should show marked improvement.

Studies that have confirmed the value of HIT in enhancing hospital efficiency have cited several advantages. HIT eases the process of retrieving a patient's historical medical data. In emergency departments where information about a patient's health varies based on the severity and advancement of the medical condition, just-in-time information can enhance the quality of care by providing treatment charts. Physicians can track the frequency at which patients visit the hospital, and therefore make informed decisions regarding their needs. Hospitals can also use return visits to gauge the quality of care offered across their systems. They can also track physician performances. Raja et al. (2019) confirmed that HIT use reduced the frequency (and

possibly overuse) of CT, imaging scans for patients with renal colic within the emergency department.

Efficiency issues of HIT in the emergency department arise when these technologies malfunction to inhibit physician access to necessary information for effective diagnosis. Offline operations mean that ED specialists can only use partial information when making medical judgments and decisions. Such failures compromise the efficiency of diagnosing, prescribing, dispensing, and billing, which sets the path for medication errors. Wretborn et al. (2019) confirmed that EHR downtimes increase physician workload. Limited access to informational resources makes it difficult for doctors, nurses, and other staff working in the emergency department to reduce their caseloads, thus causing persistent overcrowding.

Most data entry systems in EHRs use templates designed for each medical procedure. Nurses and doctors are likely to experience a difficult time when handling a medical condition that deviates from the normal. Here, data entry might not be efficient, and so are the retrieval functions, especially if a different doctor handles the patient in the subsequent visit. Other problems linked with HIT, information access, and efficiencies within the ED are “hanging of systems.” Hanging systems are problems that slow down information access and prompt use, preventing access to medical records when the main computers or servers crash or whenever there is an outage. There is also insufficient training of staff to equip them with the right knowledge and skills needed to access HIT-based information.

Moreover, stringent regulations aimed to safeguard patient rights and interests accompany HIT systems. Patients who are treated by more than one physician might face treatment complications since information exchange might face significant hurdles. Delivering appropriate care might take a longer time, which patients with urgent medical needs do not have.

Additional challenges in efficiency arise when part of a patient's data are recorded in the paper while the rest was imputed on computerized systems.

Physicians must conduct preliminary data collection during initial consultations where they feed critical details about the patient's medical condition into the EHR by navigating complicated user interfaces. This data entry process may leave the patient feeling uncared for and reduce the speed at which the ED staff address the medical cases. Similarly, physicians might find it difficult to capture every critical detail while at the same time, paying attention to the patient. Chances that the information retrieved might not reflect the actual condition of the patient is likely unless the physician later fills in the information gaps.

Abuse of Health Information Technology. Recent studies showed an uptick in resource consumption in hospital EDs, and by extension, higher costs for the hospital (Agha, 2014; Shiferaw & Mehari, 2019). Adoption of HIT in the ED could increase diagnostic and laboratory testing due to the ease of ordering tests (Selck & Decker, 2016). Prompt availability of patient history, including current medications, prior diagnosis and treatments should lead to a reduction in repeat testing; however, studies conducted by Bullard (2016), Agha (2014), and Lammers and McLaughlin (2017) showed an increase in the cost per discharge without noticeable cost savings, reductions in medical errors or readmission rates.

Medical information technology has been heralded for improved efficiency across healthcare facilities and improved healthcare outcomes for inpatient and outpatient service seekers. It has also been recognized for improving access to health data remotely, applying safe data storage mechanisms, and promoting confidentiality of patient data (Ben-Assuli, 2015). Nevertheless, people continue to express fears about access to unauthorized users and exploitation of personal information for unintended purposes.

The design of most health information technology systems commonly used by doctors and hospitals makes it easy for confidential information to fall in the wrong hands where they can be used for medical or non-medical gains. Unauthorized internal users can lay their hands on protected electronic data through the actions of uncommitted coworkers, authentication failures, poor management of passwords, and inadequate encryption. Unauthorized access to protected patient information by external parties occurs through stealing and hacking devices used in storing health information (Ben-Assuli, 2015; Nashef et al., 2017). The problem of information misuse escalates when hospitals fail to develop and implement regulations that define which people are authorized to access personal data as well as the nature of data they can access at any particular time. Therefore, healthcare service providers are always advised to invest in well-designed and protected EHR systems from preventing liabilities. They must develop and communicate regulations and define appropriate safeguards to enhance the safety of electronically produced information. The Health Information Portability and Accountability Act (HIPAA) of 1996 were created to guide healthcare providers as they struggle to integrate and ensure safety for their electronic health information (Ben-Assuli, 2015).

Electronic health records (EHRs) contain personal identifier information, including demographics, medical history, session notes, laboratory test results, vital signs, medication, and other health-related information. Abuse of such data by physicians, hospitals, and other entities occur in various ways. These people can sell a patient's medical information to unauthorized people. They can perpetrate billing fraud through unwarranted drug prescriptions or billing for services not rendered (Nashef et al., 2017). This behavior is common for healthcare providers seeking higher compensations from insurers. Misuse also occurs when an individual commits identity theft; that is, he or she uses a patient's credentials to obtain medical care. An

organization misuses protected patient data when it uses such information for profiling, data mining, or any other unauthorized use. Abuse may also take the forms of coercing patients into sharing private information.

Hospitals use HIT systems in billing processes, which means healthcare service providers must disclose fragments of patient information with third parties like insurers for these entities to pay for the rendered medical services. Even though they try as much as possible to remove the name, address, and other critical details when sending data to third parties, buying, and selling patient data without the approval of primary caregivers remains a worrying concern. The government has developed standards and regulations to prevent abuse and misuse of health data. However, healthcare facilities must make it their initiative to nurture an ethical culture and monitor employee activities religiously to protect themselves from lawsuits.

Cost of Implementation and Training. Hewner et al. (2018) noted even though there are potential advantages in adopting HIT, such as EHRs and RFID, the cost of infrastructure required to integrate the technology with the current systems is high, and this discourages many healthcare facilities from adopting technology. When using technology such as RFID, skilled analysts must analyze the data derived from RFID, which further increases the cost of care.

Many studies revealed that dissatisfaction of HIT stems from lack of time dedicated to properly training staff on the complete functionality of systems; this causes delays in data input and sharing, resulting in ineffective communication between healthcare teams (Ko et al., 2018; Meehan, 2017). In addition to lack of training on the new system, Porter et al. (2018) found that most hospitals fail to invest in technology infrastructures, such as too few computers/tablets, and limited internet bandwidth which results in connectivity issues and slowness (Yen et al., 2017). Another significant cost associated with HIT implementation is technical support. If a system

went down in the evenings or on the weekends or holidays, staff could expect to wait 24-48 hours before receiving assistance (Geerligs et al., 2018). In the ED, patients do not have 24-48 hours for the system to become functional.

Understanding How to Implement Technology. The widespread use of technology across the healthcare realm changes the way companies run their day-to-day operations. Today, several technologies are at the disposal of hospital administrators to integrate within their systems (Morilla et al., 2017). Examples of these technologies include EHRs, HIE, personal health records (PHR), patient portals, telemedicine, social media, mobile devices, and wearable sensors or monitors. Hospitals must seek to understand the best way to implement these tech developments, given their inherent differences. Gathering insights on effective integration techniques, the application within hospital settings, and optimizing output are crucial steps towards maximizing productivity. When integrating technologies, one must develop a shared vision and communicate goals, nurture a culture that encourages stakeholders to support and participate during implementation, develop a reliable and robust leadership structure, and ensure accountability.

As Shirley (2018) mentioned, the technology that could lead to a transformation of care delivery is available, and the challenge is how to use it. Shirley (2018) also noted that software, IT equipment, and skilled personnel are prerequisite to implementing effective technology in healthcare. The physicians, nurses, doctors, and other medical practitioners require effective training in using technology while administering care. A system that links various departments to EHR database systems is then introduced and integrated to authenticate cross-department sharing of patient's information (Yang et al., 2019). The system should then be secured to protect the

patient's data from unauthorized persons to prevent manipulation, which could lead to adverse medical errors (Raposo, 2015).

The Problem

Crowding in the Emergency Department. The crowding of EDs has been a public safety concern worldwide. ED overcrowding has been on the rise, and studies have not been able to link these increases solely to population increase. According to a 2003-2004 study by the Centers for Disease Control (CDC), over 10% of critical patients had to wait more than an hour to see the doctor (Salway et al., 2017). The problem has been a significant concern for healthcare professionals for over a decade, and researchers have focused their efforts on finding effective solutions to the problem. These problems include increased medical errors, longer patient stays in hospitals with higher mortality rates, unnecessary use of ambulances, all of which lead to financial and reputational damage to hospitals. Salway et al. (2017) found the problem is mostly due to hospital capacity issues, even though the number of admissions per day can be estimated in advance. The problem is compounded by the raging debate on the causes of crowding, which prohibits the development of targeted solutions to combat ED crowding.

Overcrowding within the ED reduces the quality of disseminated care to increase death rates by slowing down the speed at which seriously ill patients get the medical attention they require. These patients must wait for a prolonged period on the queues leading to further deterioration in their health capacities. Overcrowding also increases healthcare costs through diagnostic evaluations that would otherwise be avoided. In the end, overcrowding causes patient dissatisfaction and reduced confidence in a hospital's ability to address public health concerns.

Overcrowding signifies the existence of multiple conjoined problems that affect the efficiency of various aspects of the emergency department. It may signify that patients are

staying for a longer time in the ED because they need advanced diagnostic testing or that inpatient medical care is ineffective. Overcrowding indicates that a facility has an acute shortage of healthcare personnel, delays in consultations, repeated ED visits are high, delays in discharging, and transferring patients from one hospital to another. Overcrowding could also indicate the hospital is either small or lacks enough beds to cater to the patient inflow (Morley et al., 2018; Wretborn et al., 2019; Yarmohammadian et al., 2017). Healthcare providers must address the issue of overcrowding promptly because such problems can overflow to the entire region to inhibit quality healthcare dispensation. For instance, an overcrowded ED will automatically force ambulances to divert to nearby hospitals where they will also lead to overcrowding.

Overcrowding also affects medical staff by introducing stress and burnouts. Stress occurs because of extended patient wait times and poor health outcomes. Burnouts are linked with working long hours without adequate rest (Morley et al., 2018). Overcrowding also causes health personnel to reduce their commitments to guidelines, thus increasing the chances of repeated admission.

There exists considerable information and research aimed at addressing ED crowding challenges (Krisberg, 2016). Studies showed that in addition to seeking emergency medical treatment, the ED is sought out for primary care treatment by many patients who do not have access to other healthcare treatment facilities (Jones et al., 2018). However, myths associated with the causes of crowding have proven to be a bottleneck in implementing successful and sustainable solutions (Carlson, 2016). One study examined the effects of ED crowding and listed delays in the administration of antibiotics and prompt cardiac interventions as factors resulting in severe and inconvenient health impairments to patients (Yarmohammadian et al., 2017).

Additionally, Pines and Bernstein (2015) proposed solutions that included public awareness campaigns and education on the proper use of ED facilities. Some of these solutions include financial disincentives to discourage ED attendance, redirecting non-emergencies from attending EDs, and early diagnosis and provision of other alternative clinics for patients with minor complications.

Organizations can tackle the problem of overcrowding using two broad strategies. They can pursue techniques that will reduce congestion, or they can introduce measures to combat problems arising from ED overcrowding. Alternatively, they can integrate both mechanisms to prevent overcrowding as well as eradicate potential adverse effects (Morley et al., 2018; Wretborn et al., 2019). The adopted solutions should always focus on reducing patient visits to the ED, the average amount of time people stay in the emergency department, and improving patient outflow systems, whether through transfers to other areas of the hospital or other facilities altogether.

Among the myriad strategies proposed and used to manage, overcrowding in the emergency department is technological integration. Today, EDs across the world use HIT systems from patient registration processes to health tracking, electronic order entry, electronic health records, and organizing patient discharge.

Benefits of Health Information Technology. Alotaibi and Federico (2017) noted that patient care needs vary from visit to visit, whether the visit is emergent or otherwise. The seamless and timely flow of information across these systems enables professionals to offer evidence-based care, thus reducing the likelihood of adverse events such as medical errors (Wong et al., 2018). For instance, Schiff et al. (2015) reported that CPOE alone could decrease serious medication errors by almost 55%, and by over 80% when adopted together with a CDS.

In turn, the authors posited that reduced errors translate to decreased medical costs, improved health outcomes, and decreased chances of readmission and redundant tests (Zikos et al., 2014). Other advantages associated with EHRs include increased revenues from enhanced financial recordkeeping and improved legal compliance and regulation due to increased privacy and confidentiality of personally identifiable information (Rezaeibagha et al., 2015).

In the ED, a patient's health history could be instrumental in assisting a physician to assess the most appropriate care needed after referencing the patient's medical trend. An updated health record with a patient's documented health history makes it easier to provide physician assistance. Castillo (2019) noted that having a patient's records entails having a written story that one can read even in the absence of the author. In case of an emergency where the patient is unconscious or unresponsive, an electronic medical record is the only reference that should guide nurses in administering care.

According to Deryahanoglu and Kocaoğlu (2019), the healthcare industry remains understaffed, and cases of medical care errors are common. Deryahanoglu and Kocaoğlu (2019) also posited that WHO publications on patient safety in the year 2009, disclosed that tens of million patients suffer injury or death every year due to the administration of incorrect medical care. These findings are devastating as patients are considered safe when handed over to healthcare units. Patients and staff perceive the use of medical information technology as a solution to preventing medical errors when administering care to a patient.

Electronic Health Records. According to the Centers for Medicare and Medicaid Services (2012), the EHR is an electronic record that contains a patient's medical history and treatments as collected by medical practitioners. The information is shared across the healthcare network to give access to authorized practitioners at any given time (Kim, Lee et al., 2017).

EHRs provide accurate, reliable, and up-to-date information that enable the administration of care to patients. Ben-Assuli (2015) stated that when the patient's health records are up to date, health practitioners can use it in evaluating a medical condition during an emergency, and this could be a lifesaver. A patient's past medical history is particularly useful when the patient is unconscious and a stranger to the people who take them into the ED. When no medical information is available, the physician works based on their experience. Still, there are instances when a condition could be new to a physician, and could delay the administration of care, exposing the patient to the risk of losing his/her life (King et al., 2014).

Brooks (2019) noted that making information available as soon as required enhances the provision of efficient care. Similarly, Castner and Suffoletto (2018) observed that for value-based care to be realized in the ED, there should be an elaborate mechanism that enables the management to determine whether practitioners responded in the best way possible while administering care to a patient. In an emergency, hospital staff provides patients with the most efficient care within the shortest time possible, until the patient stabilizes. The presence of EHR systems empowers the practitioners to respond to emergency cases as soon as possible as the required information is readily available.

EHRs help in the sharing of information amongst clinicians and healthcare practitioners. Emergencies are by nature unpredictable and can occur anywhere. Ellis and Levy (2009) observed that the confusion that arises among civilians when an emergency incident occurs should not be experienced in medical facilities since practitioners are expected to have the requisite skills to reverse a severe medical condition and stabilize the patient. However, there is a concern on how, from a non-medic point of view, a practitioner is expected to deliver value-based care without having the "key to open the door." The key, in this case, refers to a patient's

health background, while the door refers to the patient. This explains why having access to patients' health data are necessary and advantageous for the patient.

Mobile Electronic Health Records. The use of mobile electronic health records (MEHRs) in care settings is becoming increasingly popular. MEHR usage has proven to increase clinical workflow, which, in turn increases efficiency and the quality of care offered to patients (Duhm et al., 2016). It also provides remote access to clinical information, which is a time-saving feature since physicians can use this information to make decisions while not being physically present. MEHR is an essential feature for today's healthcare system due to its association with enhanced quality of care and patient health outcomes.

Duhm et al. (2016), attempted to understand physician perceptions on the use of tablets installed with EHRs and its association with timesaving and usage. They performed a 57-item survey questionnaire and administered it to 14 physicians (Duhm et al., 2016). The results showed that physicians had a positive attitude and perception towards the usage of tablets with EHRs. They noted that MEHRs improved communication with each other as well as their patients. It also streamlined clinical workflow with data retrieval capabilities. The results found that physician's attitudes towards novel technologies had improved due to the usage of these devices. These results support the arguments made towards the use of MEHRs as an effective way of improving care and patient health outcomes.

In the same breath, Choi et al. (2015) identified the usage pattern of a MEHR system as a way of finding useful information to guide the design, development, and implementation of future applications. The researchers developed a MEHR service named Ulsan University Hospital Medical Information System (M-UMIS) and examined the adoption and usage patterns of all healthcare professionals using it. The results of this study indicated that the adoption and

frequency of use of M-UMIS increased gradually. The results also showed that the most accessed feature on the M-UMIS was the patient list (Choi et al., 2015). Therefore, the researchers concluded that examining such patterns of usage can help in developing better and more capable MEHR systems, which also contributes to the promotion of value-based care.

Even with the benefits that MEHRs have when it comes to improving value-based care, the procedures and parameters taken when developing these devices contribute significantly to their success or failure. Vossebeld et al. (2019) aimed to analyze the development of the MEHR as a way of finding out what led to its failure to perform its intended purpose. The MEHR is a mobile electronic health record whose intended purpose was to reduce some of the nursing workloads, thus, limiting the possibility of staff fatigue or burnout in the workplace. The researchers reviewed and analyzed files, documents, interviews, and short inquiries. The researchers found that suboptimal supportive technology, disruption of nurses' workflow, and the limited functionality of the app and input device were the primary reasons behind the failure of the MEHR (Vossebeld et al., 2019). They concluded that the design parameters of such a system should consider staff needs as well as hospital administrators and patients' preferences to ensure that it is performing its intended role successfully.

In contrast, Kim, Lee et al. (2017) explored the most accessed clinical information via MEHRs. They found that the most accessed information includes the patient list, lab results, and investigation lists. Peak usage of the MEHR was during the mornings and early evenings to midnight. Patient conditions and their investigation statuses were the main factors that represented the most accessed clinical information (Kim, Lee et al., 2017). The results showed that MEHRs helps streamline decision-making, which enhances patient health outcomes.

Radio-Frequency Identification. A radio-frequency identification device (RFID) is defined as "technology that uses radio waves to identify people or objects. The device reads the information contained in a wireless device or "tag" from a distance without making any physical contact or requiring a line of sight" (Poigai Arunachalam et al., 2017, p. 1). Currently, many industries utilize cost-effective technologies, such as RFID. Some of these industries are banking, airports, retail, and production (Deryahanoglu & Kocaoğlu, 2019), and healthcare is no exception (Rosenbaum, 2015). Introduction of RFID in patient safety controls, such as drug control, patient tracking, and doctor order monitoring would facilitate the smooth running of an ED department (Khalifa & Zabani, 2016). RFID technology helps improve hospital supply chains by monitoring and tracking the use of medical supplies and inventories, as well as evaluating healthcare equipment (Coustasse et al., 2015).

The issue of cost and competencies of personnel required to make the introduction of RFID is standard in healthcare, but not in other industries. Some have concerns about whether life is less expensive if the healthcare facilities can afford to provide medical services without mitigating the care risks that are known. In contrast, other industries have already adopted the technology to promote the delivery of services to their customers. As healthcare unit management strives to provide care while still making a profit like any other business, adopting the RFID technology becomes a challenge due to its associated incidental costs.

Behavioral Aspects of Executive Leadership. Leadership is critical in healthcare organizations for facilitating and influencing collective and individual efforts towards the attainment of mutual goals. Leadership can impact the processes that determine performance or the improvement of a team or an institution. The behavioral aspects illustrate the leaders' impact on the organization, work unit, and a team. Various leadership approaches are required in

varying circumstances. Leaders should select the most efficient style concerning a situation or needed change for the attainment of the common objectives.

Many elements can influence the behavioral leadership process. According to Paais and Sui (2018), the delegative, participative, consultative, and instructive leadership behaviors significantly affect employees' contentment in a positive manner. However, informative behavior does not have a tangible effect on work satisfaction. Hence, leadership should uphold a combination of delegation, consultation, and participation. The conduct enhances the workers' experience and satisfaction, which are critical for improving performance outcomes.

Each of the healthcare arenas requires perfect leadership behaviors for quality services. Physicians, particularly those who work in the ED, are trained on the technical aspects of their job requirements for diagnosis, therapy, and administration of patient care (Lateef, 2018). Few elements of leadership are included in the courses. Therefore, emergency physicians (EPs) undergo consistent training to execute their technical duties and appreciate the feedback from their peers.

Leadership within the emergency rooms is one of the most challenging. EPs are expected to embrace unique problem-solving abilities. Nevertheless, they lack requisite skills to optimize emergency room management (Lateef, 2018). Leaders should combine several strategies when guiding the emergency team through change. A more structured approach can guide the leaders in emergency control and design a favorable strategy for successful transformation.

Leadership studies concern the competencies of individuals holding formal positions. Nevertheless, approaches that are too dependent on leadership may be unhelpful in a healthcare setting. An excellent performance by a healthcare team is more dependent on the interaction among the practitioners, not the input of a single person. Similarly, the outcome in an emergency

room is dependent on the interactions among the workers. Hence, the staff is the key initiator of change.

Nevertheless, there exists a different view of clinical leadership strategies. The latter include the accepted, social, and strategic leader. The accepted style is based on peer feedback concerning job specifications. The social leader exhibits outstanding communication and collaborative competencies. On the other hand, the strategic leader puts the healthcare organization's interests first by taking part in its decision making and strategy implementation (van de Riet et al., 2019). The adoption of each of the leadership strategies requires a vivid vision, integrity, communication, and collaboration. Hence, leaders should understand the desired direction of their leadership interventions when selecting a suitable strategy.

Therefore, the assignment of roles in the emergency department should be well planned to prevent adverse outcomes. Issues such as overcrowding influence poor patient outcomes by enhancing the incapability of practitioners to adhere to the needed treatment plans. Increased chronic and complex health problems among the elderly are some of the factors that contribute to overcrowding (Morley et al., 2018). Organizations should balance the demand and supply of emergency services.

Clinical activities often consume the practitioners' efforts and time. For example, the COVID-19 pandemic has brought forth an unprecedented crisis (Trepanier, 2020). Nevertheless, the experts should not ignore the essence of efficient leadership strategies in enhancing quality in a health care setting (Xu, 2017, p. 155). Consequently, applicable leadership models should be embraced to provide an efficient and safe care environment. Given the criticality in the emergency department, leaders should remain proactive in selecting the models to employ. Different leadership strategies are required for distinct conditions. Hence, the leader should

understand the most effective style in each situation. By adjusting their approaches to fit the case, the leaders can influence the success and performance of the emergency healthcare team.

Concepts

Value-Based Care Model. Hospitals take the issue of increasing and maximizing the quality of patient care very seriously. Therefore, players in the global healthcare industry are always struggling to identify and implement the best techniques that can drive quality outcomes. Value refers to treatments and the quality of care used to alleviate medical symptoms. To improve quality and maximize value, hospital administrators must be willing to roll out organizational changes that are likely to enhance employee career growth and development, improve the quality of input for better performances, and enhance patient outcomes (Zipfel et al., 2019). Value-based care models prioritize the need to inspire deep staff commitment as a way of introducing the best possible care regardless of employee job position or specialty. They stress competence, autonomy, and relatedness because these elements can foster intrinsic motivation (Nilsson et al., 2017). With such motivational factors in place, employees in the ED are likely to stay positive and devise innovative ways to deal with challenges that emerge within the workplace without suffering from moral degradation.

A value-based care model aims to provide a patient with high-quality treatment that reduces readmission and improves preventive care while using certified healthcare technology. In an ED, value-based healthcare is synonymous with how effective the healthcare providers manage an emergency case, and how long it takes for a patient to stabilize. Kamal et al. (2018) stated that value-based care is not measured by how many procedures a patient undergoes in the hospital but by how fast the physicians can provide a patient with a service that eliminates unnecessary costs while providing a solution to the patient's condition. Value-based care models

also emphasize the need to monitor and measure the effectiveness of adopted processes using scientific knowledge. The retrieved data can help initiate appropriate changes that can spearhead higher performances (Allegretto et al., 2019). Decisions should always consider the complexities of healthcare settings that affect strategy implementation. Value-based care models also stress the need for patient-centered care, that is, care planned after considering the patient's medical condition, financial status, and full-care cycle (Medford-Davis et al., 2017).

Physicians should rely on performance metrics and outcomes to kick-off necessary improvements while disseminating care. Value-based care models also emphasize cost management, although such needs should not often outweigh the desire for quality care provision. Therefore, care management can be evaluated by studying "…spending, patient satisfaction, readmission reduction, value-based purchasing, and clinical care outcomes…" (Jain et al., 2019, p. 430). Most value-based care models support the integrated practice unit (IPU) concept proposed by Porter and Teisberg. These scholars employed hospitals to create multidisciplinary teams (consisting of clinical and non-clinical personnel) where members collaborate, exchange ideas, and structure treatment recommendations that can yield the best outcomes at reasonably low costs (Putera, 2017).

Kruse and Beane (2018) observed that the reason the cost of healthcare was high in the United States is that there is a volume-based model in use, as opposed to the value-based model of care. Management in the health sector emphasized more on the volume of services offered to the patients as opposed to whether those services were necessary or not. Consequently, the ED staff performed multiple tests which translated into high medical bills to the patient and the state. A value-based model is the opposite of a volume-based model. Emphasis on the provision of efficient and preventive care by informing the practitioners about the value in care is measured

by the ability to address the patient's condition and not by the volume of tests conducted on a patient.

Leviner (2020) stated that a patient is a stranger to a doctor until the doctor gets to know the medical history of the patient. To offer value-based care, there needs to be an interaction between the patient and the physician so that the patient's medical background informs the tests conducted. However, this information may not always be available, primarily when no integrated medical records system exists. This explains why it is appropriate to have a centralized system that is accessible by physicians from anywhere.

Value-based care emphasizes the fact that spending more money does not make anyone healthier. To increase the healthcare value, the cost incurred must be measured against the value obtained by the patients. Wehrwein (2015) suggested that the value of healthcare equated to the outcome + quality, divided by the cost of care.

$$Value\ of\ care = \frac{quality + \ outcome}{cost}$$

Using Wehrwein's (2015) argument, the value of care can increase by improving quality and outcome while keeping the cost as low as possible. With this model, a practitioner's compensation is based on the results of services as opposed to the volume of services offered to a patient. Wehrwein (2015) noted that the push for value-based healthcare services by employers is an awakening call as medical costs directly affect their businesses. The implementation of a value-based model in compensating medical practitioners increased between 2014 and 2015, with the percentage of overall payments rising from 11% to 40% (Kawamoto et al., 2015).

In volume-based care, the physicians concentrated on treating symptoms as opposed to treating sickness (Putera, 2017). Patients could visit the same facility several times a year, with little to no maintenance of their medical records. The medical system appeared to be complicated

as patients ended up with different medications on their shelves, but no actual valuable treatment, though the cost had already incurred. While medical facilities strived to drive volumes and comply with government regulations, little attention was given to how the value of the service offered was measured—value-based care came in to solve this medical gap (Nilsson et al., 2017).

Adopting value-based care leads to high-value care. This gives the patients, healthcare providers, and employers a valuable experience (Yazici, 2014). The care provider gets enough time to discuss medical matters with patients and identify those that require extra care. When practicing and adding value to patients' health, physicians become happier with their job, leading to improved quality of service rendered to the patients. Patients benefit by getting valuable care that identifies the gap in past care, thereby enhancing informed medical decisions (Wang et al., 2015). Coordinated care reduces medical costs and improves health.

Episodes of Care. Episode of care is defined as the managed care provided by a health care facility or provider for a specific medical problem or condition or specific illness during a specific time period (Lamberts & Hofmans-Okkes, 1996). The episodes of care (EOC), which focuses on value-based purchasing, outcome assessments, and accountability, is becoming a valuable technique in efforts to realize value-based care within hospitals. This approach moves away from the traditional fee-for-service model to a system where caregivers bundle up and receive compensations for overall care and services rendered to a patient for a specific procedure or an illness (Iorio et al., 2016). Its goal is to offer the best care between episodes, reduce the cost of care, and limit the rates of unnecessary ED admissions. EOC ensures that only patients with severe emergency cases get to visit and receive emergency care treatments. Health professionals working in the ED, other departments, and affiliate organizations connect in a way that enhances care and other exchanges. This model also improves reimbursements for

healthcare service providers through the savings generated by improved care management and system efficiencies (Iorio et al., 2016). These savings are products from the reduction in payments incurred per episode.

Dreyfus et al. (2020) established the impact of planning and communication on unplanned costs surrounding an EOC. The study was aimed at defining the relationship between planning instances and unexpected costs for an EOC. They found that communication among team members was paramount is sharing critical information, which led to reducing the cost of an episode of care. Miscommunication has resulted in many patients being negatively affected by the unplanned operations leading to unexpected expenses. On the other hand, proper planning and continuous communication assists in managing an episode of care.

An episode of care contributes to the efficiency and promotion of accountability in the provision of healthcare services. This is because the EOC can utilize the Comprehensive Care for Joint Replacement (CJR) model, which ensures that all payments are made within a specified period (Ellimoottil et al., 2017). When payments for healthcare services are made within the given period, accountability is enhanced, which allows for transparency of health services. At the same time, it helps in minimizing unnecessary costs in the healthcare services that are not within the EOC plan.

A similar report by Oss (2018) found that EOCs is a value-based reimbursement, and its contribution to the primary care capitation cannot be ignored. Hussey et al. (2016) established that EOCs have contributed significantly to the improvement of care services as it makes the clinicians accountable. It helps in rewarding healthcare providers based on the work they do for their patients. This reward system contributes to motivating providers to work harder in improving the services offered to patients because providers are liable based on the care cost as

well as the quality of services. Patients are in a better position to receive effective care, as their healthcare services are accounted for through the process. Furthermore, costs associated with an episode of care can be measured, and this helps to evaluate the services that these clinicians provide. The ability of the EOCs to track costs assists in developing patients' confidence in their care providers that leads to enhancing their wellbeing. The overall goal is to improve patient care and promote accountability within the clinical setup.

Additionally, EOCs have contributed to enhancing the overall outcome of patient care in clinical setups. This has helped many patients realize the benefits of spending hugely on medical bills. In a report by Waldrop (2019), the traditional healthcare systems have failed to meet the healthcare needs of women in treating them because they have been based on the availability of resources as opposed to coordinating the care and addressing the root causes of the health problem. Because of that, they have experienced high costs of treatments and experienced a variety of mental health problems. However, the usage of alternative methods such as EOCs has improved the healthcare outcomes in the unique areas that affect women.

Input/Throughput/Output Model. This model encourages cost reduction in the administration of care by preventing the need for acute care and introducing substitution (Petrie, 2018). At the input point, medical services such as vaccinating, introducing public health programs, and deploying disease management plans play a vital role in preventing emergency cases. Throughput, on the other hand, encourages physicians to rely on electronic health records to be sure that the treatment administered to the patient aligns with the overall desired care plan for the patient (Jarousse, 2011). The output emphasizes post-visit follow-up where the physicians stay connected with the patient to know the progress and minimize the need for re-admission in the ED (Asplin et al., 2003).

This model addresses the overall care-plan that patients need. It is impractical for the physician to follow up on patients. ED deals with emergency cases, and the number varies from time to time. With the stretched human resources, a follow-up may be on paper but difficult to implement. A better way would include patient scheduling, whereby the availability of physicians is assessed based on the number of follow-up cases he/she needs to address on a specific day.

All sectors have their unique production cycles that must be followed to achieve desirable performances. Over the years overcrowding has emerged as a significant barrier to quality service delivery within EDs of the United States and other countries (Jarvis, 2016). Such trends are associated with various factors. These factors include high cases of ED visits, patients with severe symptoms, provision of extensive therapies, difficulty in accessing consultations in time, and poor scheduling of surgeries (Mentzoni et al., 2019; Morley et al., 2018; Moskop et al., 2019). Other factors include the shortage of nursing staff, the uninsured personnel, delayed access to ancillary services, reduced availability of long-term-care beds, high operational costs, demand fluctuations, reduced reimbursement rates, and hospital restructuring.

Overcrowding disrupts health systems, compromises efficiency in service administration, and reduces the quality of patient health and safety (Tang et al., 2015). Within the ED, overcrowding limits the availability of bed space which introduces the need for healthcare professionals to place patients, who should be admitted, along ED hallways or examination rooms while waiting for a bed vacancy in the ICU or other inpatient area. ED crowding increases the risk of malpractice, enhances morbidity and mortality rates, reduces patient/provider satisfaction, and causes financial losses through clients who left without being seen (Heaton et al., 2017).

Scientists use the input/throughput/output model to explain why overcrowding occurs within EDs in the hospital. This framework splits overcrowding into three main components, input, throughput, and output (Bittencourt et al., 2017). Input refers to systems or features that contribute to increased demand for acute or urgent care within EDs. Such needs emerge when patients become critically ill through unscheduled treatments and safety net care (Asaro et al., 2007). Healthcare professionals suggest prevention and setting substitutions as the core strategies for reducing demand for care. Prevention strategies might include public health initiatives, disease management programs, and vaccinations.

On the other hand, setting substitution employs practitioners to encourage patients to seek and acquire medical interventions in the right places. For example, patients with less urgent cases should visit clinics or primary care doctors to reduce the number of ED cases. Introducing co-payment structures in the ED will force people to seek care elsewhere, thereby decreasing populations in the ED too. Education can also guide employees where to seek medical treatment for specific conditions.

Throughput explains the activities and processes put in place to improve the efficiency and effectiveness of care provision. In this process, an organization will evaluate and modify adopted measures to address primary goals and objectives. Often considered in throughput are physician behaviors and the way healthcare professionals are using resources, that is, whether they are exercising responsible use or wasting them (Bittencourt et al., 2017). Throughput is organized into the first stage, which is concerned with activities undertaken in triage, room placement, and preliminary patient evaluation, and the second phase that focuses on diagnosis and treatment functions (Mentzoni et al., 2019). Asaro et al. (2007) determined that hospitals could only report high scores in throughput if they first determine what they consider as valuable

process outcomes. After determining those outcomes, administrators can begin taking proactive steps towards resolving variations in ED input and other potential factors that might interfere with output. Relying on electronic health records and using evidence-based decision frameworks are some of the best techniques recommended for reducing acute symptoms in the throughput stage.

Output refers to the outcomes registered after applying the throughput interventions. In other words, it analyzes the number of discharged and admitted patients within a specified period. The length of time patients spend in the ED will always be influenced by the patient, the characteristics of a disease, and system-related factors such as staffing, patient arrivals, special procedures performed in the ED, and the population of the hospital (Asaro et al., 2007). Staff in the ED can use technological developments like telemedicine to monitor patient compliance with treatment regulations after discharge. Such tools are also viable for lengthening the relationship between patients and physicians to eliminate the need for readmissions within ED. “Observation status” tools might reduce ED admissions by encouraging patients to monitor their health before deciding to visit the ED.

Theory

Complex Adaptive System. There is no universal definition of the term Complex Adaptive Systems (CAS). This is a system whereby an understanding of individual parts of a system does not necessarily lead to an understanding of the behavior of the whole system (Sligo et al., 2017). A more general description of the concept is a system made of independent agents or parts that interact interdependently by following specific principles to establish patterns that also end up influencing the same elements in the end (Camorlinga & Camorlinga, 2016). None of these parts is more superior compared to the others because the coordination of interactions is

collaborative. Interactions between agents occur naturally and are usually unpredictable; hence, it is difficult to plan for changes beforehand. A change in one agent prompts the other sections of the system to react, change, and adapt to the introduced alterations (Nugus et al., 2010). The whole is therefore more complicated compared to individual parts and has more meaning than the aggregate of its parts. From a healthcare point of view, a patient can get better healthcare experience if each department in the organization offers excellent service. An ED is part of the healthcare departments, and as a result, can implement a complex adaptive system.

The agents in a CAS are essential; however, they are not as critical as the relationships formulated between themselves. Patterns that emerge after interactions cause other agents to change how they behave, and in so doing, alter the entire system. Even the smallest changes can introduce snowballing effects on established patterns (Covvey, 2018). Besides, healthcare systems are part of a larger and dynamic environment. Changes in the external environment prompt complementary shifts in internal systems to maintain stability. The same environment also changes to manage alterations in one or more of the parts to create a cycle. Changes in CAS initiate the need to adapt to continuous alterations that occur around or within a system. Important to note is that complex adaptive systems are not as complicated as they might appear. Therefore, they can be regulated by sets of well-defined principles. The CAS model can be applied across industries like psychology, education, environmental science, physical sciences, and healthcare.

Hospitals encompass different components that work together to ensure system-wide efficiencies. They have staff members, patients, careers, suppliers, partners, and commissioners. Unlike the United Kingdom, where hospitals are agents within the National Health Service (NHS), the United States has a pluralistic, decentralized healthcare system making efforts to

change behaviors, and implement and effectively use technology even more complex. In most cases, hospitals use advanced technology in providing care to patients. However, the use of technology is adopted selectively as the EDs barely rely on technology while serving the patients. Castillo (2019) noted that though there are computer devices in hospitals, there is a limited connection between them, resulting in inefficiencies in healthcare delivery.

Patients that need immediate attention visit the emergency unit. Once the patient stabilizes, they transfer to the next department for further medical care. As a unit in healthcare, the contribution of the ED to the health of a patient cannot be over-emphasized. For a patient to recover, it must start with the success in the ED. Further, the efficiency with which the ED offers healthcare services to the patient depends on the systems in place to enhance the provision of care. The ED is among the most complex systems within modern healthcare facilities, and it can benefit from the concept of CAS. ED has the following agents: executive officers, chief quality officers, risk managers, ED directors, and ED clinicians and staff depending on their sizes. Healthcare professionals run highly efficient systems, given the health and safety threats introduced by overcrowded spaces and operational mishaps.

While recognizing the ever-changing nature of a typical ED in hospitals, Nugus et al. (2010) sought to evaluate the concept and relationship between integrated care and complex adaptive systems in EDs. These scholars focused on referral hospitals located in Sydney, Australia. They applied ethnographic qualitative research methods and used observations and semi-structured interviews to collect data for over one year. The findings supported that healthcare administrators can use CAS approaches to evaluate the sufficiency of integrated care in EDs. Integrated care delivery has direct links with patient categorization, diagnosis, and discharge. These activities require proper communication and negotiations between clinical and

non-clinical staff from different health departments. Employees working in the ED have different specializations; thus, they disseminate various services that cater to diverse patient needs. Similarly, employees in the ED manage a high number of patients with urgent needs within a short time, which implies a need for extremely efficient systems that cannot be explained using linear models.

Factors affecting ED operations may be classified as internal factors a hospital can control or external factors beyond the organizations' control. Operational inefficiencies affect the management of hospital patient flow systems, which then lengthens patient stay leading to overcrowding (Tang et al., 2015). ED patient procedures dictate that a patient arriving at a hospital in a critical condition should be transferred to the ED stretcher as fast as possible and triaged. Healthcare professionals should then stabilize the patient and admit or discharge them. Patients will spend a long time in the ED if clinicians fail to perform these activities promptly. Overcrowding will occur, leading to depreciation in the quality of patient care and safety. In as much as hospitals cannot control issues that arise outside their facilities, they can prepare in advance to ensure optimal performance when they emerge. Hospitals can provide adequate inpatient bed capacity, adopt proper scheduling of surgeries and support, ensure appropriate resource availability (equipment, surgeons, and critical specialists), ensure adequate space to improve efficiencies, and reduce ancillary service delays for better ED performances.

Improved medical technology means that patients with complex diseases can undergo screening and diagnosis to determine the extent of disease, and physicians can recommend appropriate interventions to manage the symptoms. Most of these treatments require timely medical service administration to smooth subsequent operations, thus ensure the proper flow of patients. Delays in either of these systems prolong the time patients stay in the ED.

Related Studies

Effective Use of Technology. Technology is the future of healthcare. Effective use of technology is possible by having the right equipment and skilled personnel. In most cases, technology has advanced at a faster rate, making it difficult for human resources to cope with the advancement. What transpires is that the technology becomes useless to some, though useful to those who have human resources with capacities to use it. Scientific breakthroughs and technological advancements continue to transform the way players in the sector are managing their processes and operations, thus fulfilling their duties to stakeholders. In the recent past, the healthcare realm has seen the introduction of new devices, drug treatment programs, healthcare support systems, and many other developments because of technology. Industry trends provide a positive outlook for the rapid technological growth and evolution of innovative tools and techniques that can improve the quality of care to generate healthy societies. Nonetheless, human factors continue to act as significant obstacles towards the full integration and maximization of associated benefits. Effective use of technologies within hospital settings introduces advantages such as effective patient diagnosis and treatment, improved patient health, reduced workload, higher motivation, higher accountability, decreasing costs of production, and higher revenues.

An ED that adopts the use of technology increases the chances of stabilizing the patient's medical condition and saves time for the physicians to serve other patients. An integrated information system in healthcare enhances timely and shared decision making with a click of a button (Balogh et al., 2015b). An ED that uses technology effectively facilitates access to patients' information and minimizes time wastage during the administration of emergency care. With a quick reference to EHRs, the patient's medical history is reviewed, and a prediction made on what could have transpired, and the results shared with paramedics (Cram et al., 2017). The

vital signs are evaluated, and the physician is informed of the possibility of another problem if the patient does not exhibit any signs of the predicted medical problem. This prompts the doctor in-charge to query the clinical-data sharing network and hospital digital library, where he/she gets a suggestion of the most appropriate diagnostic test given the patient's medical history (Balogh et al., 2015b). As the doctor navigates through the system, a prompt appears noting that a CT-scan would be effective given the patient's history. He/she initiates a recommendation, but before the ED staff issues out the instruction, the system prompts that the proposed test could have a dangerous interaction with a medication that a patient is taking. The computer selects an alternative test, and the doctor considers it instead. The technician then continues administering care while the physician attends other patients (Balogh et al., 2015b).

After the patient receives a diagnosis, the results transfer digitally into the system, and the doctor can easily access the findings. Besides, using the radio frequency identification device (RFID), the doctor can trace the location of the patient. The doctor then recommends the medication to the patient and discharges him/her by approving the discharge request on the dashboard sent by the triage nurse. A notification dispatches to the nurse on the availability of the ED for the next patient (Paaske et al., 2017).

Upon patient discharge, the system generates the results of the diagnosis, symptoms to observe, and whom to consult with and when. The doctor then receives a secured email that summarizes the patient's ED visit and instruction issued to the patient at the time of discharge. With this information, the doctors use an e-prescribing model that screens for any potential drug interaction problems based on the patient's medical history and sends the prescription to the pharmacy near the patient's home. This saves both time and risks associated with legibility problems (Kupperman et al., 2016).

Patient Participation. Patients are the most vital stakeholders in the healthcare sector because they are the sole reason the industry exists. Today, healthcare outcomes are overly dependent on patient participation. The quality of care depends on whether the patient agrees to participate, and truthfully answer questions provided by the physician. Patient participation refers to the involvement of patients in medical decision-making processes as a way of enhancing and promoting positive behaviors. Shared decision-making (SDM) is an essential feature of patient engagement within the emergency unit (Probst et al., 2017). Traditionally, patients only participated in ED care by offering critical background information on their health and responding to questions directed at them (Tobiano et al., 2018). Patient engagement allows medical staff to consider the values and preferences as well as the situations of patients, thus blending their voices in the final decision for adequate representation and outcome acceptance. Participation enables them to ask questions and share their concerns (Annermans et al., 2018). A good SDM process in the ED should involve a minimum of two participants (physician and patient), allow participants to share information, occur after reaching a consensus on the best treatment and agreement to pursue a proposed treatment process (Tobiano et al., 2018). The benefits of patient participation in ED include increased patient satisfaction, better adherence to treatment programs, faster recuperation, and elevated health and wellbeing.

The most common experiences of patients registered in the ED or those who have undergone an ED exposure are stress, fear, vulnerability, and anxiety. ED patients consider wait time, access to personal information, interactions with staff, and space as the critical determinants of satisfaction and desire to participate during their visit (Annermans et al., 2018).

Patients in the ED can participate in decision-making processes in the diagnostic, therapeutic, and dispositional stages. Important to note is not every patient can engage in such

procedures. Only those with the intellectual ability to understand and make reliable choices are typically allowed to make decisions about their health and care. Therefore, children and mentally incapacitated adults in the ED cannot engage in decision-making functions. Medical professionals must offer sufficient and accurate information to facilitate quality decision making. ED staff should also build positive relationships with patients to nurture co-operation.

Dyrstad et al. (2015) evaluated factors that influence patient participation in the ED. To gather this data, these scholars solicited the opinions of 27 healthcare professionals who managed older patients within the ED during their careers. They determined that participation in care provision depends on the condition of the patient, hospital resources, attitudes of healthcare professionals, quality of care provided during hospital admissions, and the presence or absence of a supportive system. Frank et al. (2011) determined that young patients in the ED are often more determined to engage in care compared to older people.

An interesting fact is that most satisfied patients are willing to participate in treatment (Berkowitz, 2016). Recent developments in health information technologies have improved safety for personal health data, thus enhancing client confidence in service providers. In turn, these individuals have become more willing to share personal data, which, in turn, improves treatment outcomes. The fact that patients can share health data with their service providers through their mobile phones elevates participation as well. Patient participation has been associated with better health outcomes for patients with chronic illnesses as well as at-risk populations.

The role of healthcare professionals in the ED is to gather and interpret patient data and use this information to make sound deductions regarding treatment options and medication. Because these individuals manage multiple clients at the same time, the chances of making

erroneous decisions that impose harm and reduce patient safety are high. Risks of misinterpreting data, performing unnecessary tests, and duplicating tests, as well as omitting critical information, are common outcomes associated with medical errors (Salway et al., 2017). Around 44,000 to 98,000 Americans die because of mistakes rising from treatment functions every year. Moneywise, these translate to approximately $17 billion to $29 billion in annual losses from the healthcare sector (Weigel et al., 2015). IT enhances information-sourcing processes to reduce errors. Hospitals can also use IT to enlighten patients about the dangers of failing or refusing to liaise with physicians. Besides, health information technologies permit coordination and smooth information sharing between service providers, laboratories, pharmacies, and patients regardless of location to maximize stakeholder participation in medical treatment (Salway et al., 2017).

Technologies improve communication between doctors, nurses, hospital administrators, and patients to maximize interactions. For example, ED staff can use mobile phones to call and check on patients regularly. At the same time, patients can also consult their physicians if they have a problem to initiate appropriate and timely interventions. As a result, patients will interact with healthcare staff and receive more significant services, report higher satisfaction, provide positive reviews, and catapult the company's ratings compared across the industry (Berkowitz, 2016).

Promoting Effective Communication. A typical ED has the following types of employees: team leader, senior hospital leader, ED physicians and nurses, ED support staff, research/data analyst, and representatives from inpatient units. These entities assume different job roles, each of them intertwined to create a robust system – success or failure in either of these tasks' risks introducing the same effects across the organization. With the passage of the

HITECH Act of 2009, hospitals have adopted healthcare information technology systems to transform their internal systems and improve healthcare service delivery (Witten, 2018).

Most medical tasks in the ED require interactions geared at either collecting or using data. Communication between stakeholders is a continuous process. For example, when taking and recording medical information, when performing patient examinations, when ordering tests, when interpreting test results, when providing diagnoses, when developing treatment plans, and when informing other practitioners whether it is appropriate to admit or discharge a patient. Communication may occur through face-to-face exchanges or with the aid of computerized systems (Arnold & Boggs, 1989). The quality of communication determines the effectiveness of the management team.

Technology improves communication between stakeholders in healthcare facilities to enhance the quality of the work environment. Technology reduces medical errors by forcing individuals to use empirical data collected and stored within internal servers. It can also promote social sharing, effective management of emails, autonomy, facilitate effective task delegation, and drive the higher organization of daily activities (Jones et al., 2014). Social sharing leads to effective communication, eliminates misunderstandings and conflicts, which can cripple workplace functions depending on the magnitude of the issue, and lead to a significant reduction in the value of rendered services.

Effective communication is not only about sharing content, but also introducing an open system where health professionals can offer feedback freely and without consequences. Healthcare professionals must ensure they are using the right tools and strategies to facilitate quality exchanges. All employees should understand the communication methods adopted by leaders. Further, technology enables leaders to restructure what they are trying to say in a way

that subordinate staff members can understand without significant constraints (Arnold & Boggs, 1989). The ability to translate complex concepts to simple structures such as charts and graphs allow employees to enjoy work, which means quality service dispatch. The nature and quality of inter-professional and interpersonal relationships affect communication between ED staff by influencing the availability of stressors.

Healthcare service providers leverage information technologies in various ways to improve communication between nursing and non-nursing staff within the ED. EDs equipped with high-speed internet services, cameras, and monitors allow speedy consultations between healthcare professionals with patients located in remote areas (Stephen et al., 2019). Health experts can collaborate with other providers by sharing images to boost the quality of disseminated care. Besides, telehealth improves data collection and sharing between professionals, which improves tracking and monitoring progress for better treatment outcomes.

Health information technologies improve communication between emergency care staff and other departments if they integrate and coordinate effectively. For example, they allow patients under critical conditions to make online submissions about their health before arriving at a hospital. This prompts hospital staff to prepare to receive patients while the ambulance is still on its way. Paramedics can use different communication tools to share details about the patient's vitals and stability to improve service efficiency when they arrive at the treatment facility.

Electronic health records (EHRs) provide immediate access to vital patient information that can be used to make decisions on the best treatment options available. EHR systems are more effective if all departments interconnect because then, facilities can accomplish seamless information sharing to improve access to relevant data by authorized personnel only (Adler-Milstein et al., 2017). This helps to reduce medical errors and improve patient safety. Hospital

EDs can leverage computerized physician order entry (CPOE) and clinical decision support systems (CDSSs) when handling different patients. CPOE is a software system that allows physicians to input, and sometimes send information related to a patient's treatment instructions and medication to other professionals. They ensure healthcare providers are using the best information and knowledge when making decisions. CPOEs allow physicians and nurses to counter check whether dose prescriptions are safe and effective. Health service providers can also perform system monitoring and audits to identify unusual cases. CPOE systems save time, maximize resource utilization, spearhead total adherence to clinical guidelines, and reduce medication errors. CDSSs help to improve decisions in activities related to task monitoring and prevention, diagnosis, prescription medications, and care management.

IT integration facilitates proper communication and enhances patient flow coordination and management. Technologies such as electronic dashboards, radio frequency tracking, and wireless communications systems are useful for staff and patient management. IT tools can also link the ED department with the rest of the healthcare facility and community, where effective communication will ensure access to information that can improve access to useful clinical information for emergency care (Selck & Decker, 2016). Computerized physician-patient messaging improves care coordination. Telemedicine enables increased use of medical knowledge to improve the quality of care patients in remote areas receive. Clinical decision support (CDSSs) allows physicians to select the best and most economical therapies that can enhance patient safety. These tools also provide alerts and warnings if the chosen treatment protocols are risky or whose results are unknown.

Electronic documentation of emergency services improves accuracy in collecting and storing detailed information on the adopted treatment plans and the way patients are responding

to care. This data can also assist in claim reimbursements for services rendered and support research activities. Companies can also offer computerized education and training resources to update the workforce with the current knowledge and skills to improve the quality of care.

Decreased Staff Turnover. Employee turnover is a serious concern for hospitals because of the impact it introduces on patient wellbeing, departmental performance, and overall organizational performance. According to Kurnat-Thoma et al. (2017), turnovers cost hospitals about 5 to 5.8% of their annual budgets because companies must fill those vacant positions. Staff turnovers in the healthcare sector are associated with poor pay, poor transitions when joining an organization, adopted management styles, and dissatisfaction with the way management teams interact with subordinates. Acuity level of patients, nurse-patient ratios, workplace dynamics, peer relationships, scheduling, workplace violence, deep desire to improve or change careers, and family issues also perpetuate staff turnovers (Wager et al., 2017).

In healthcare, staff turnover arises because of frustrations that occur while administering care to the patients. When technology is used in the ED, care will become easier to administer as the emergency team works on reliable information as opposed to a trial and error method that is adopted in most cases. With enough information regarding the patient's medical history, the diagnosis offered to patients are pre-evaluated, and proposed medical tests are geared towards treating the sickness as opposed to fixing symptoms (Schoenung & Dikova, 2016). The rate of readmission reduces eventually, which is an assurance to the physicians, nurses, and doctors that they are making a difference in the medical field.

High turnover rates lead to understaffing (Metcalf et al., 2018; van de Klundert et al., 2018; Wendsche et al., 2017). Employees are working extended hours, a factor that increases the chances of substandard care, medical errors, burnouts, and deteriorating physical and mental

health (Hertzberg et al., 2017). Hospitals are bound to report higher patient mortalities under such circumstances. EDs are very dynamic. It is impossible to tell what kind of a patient will be rushed in, or what treatments an individual might need to stabilize his or her condition. The case worsens for facilities that manage huge volumes of critical patients. Hospital staff working in EDs experience a lot of stress. High turnovers reduce nurse-patient ratios, and in so doing, minimize employee competency as they disseminate their responsibilities.

Raj (2015) noted that when a person is convinced that he/she makes an impact in a situation, he/she is likely to repeat it more often. The passion for work is not only connected to the monetary gains but also to the difference that an employee makes and the working environment. Poor planning of patient care and inaccessibility to patient's health information exposes the nurses and physicians to psychological stress that eventually leads to their quitting either the profession or relocating to another healthcare facility (Koinis et al., 2015). Having a satisfied workforce means running a committed and happy team that is ready to deliver quality services for better patient outcomes. Investing in quality healthcare information technologies can reduce the frequency of ED visits by ensuring the patient receives the right care during their first visits. Leveraging technology in primary care settings helps to manage chronic diseases, substance abuse, and mental health problems that might trigger emergency treatments. This helps to reduce avoidable visits that strain facility resources.

Technology leads to the automation of specific activities within the ED to eliminate the need for extra manual labor. Such systems reduce workload and allow healthcare professionals to concentrate on other areas requiring critical attention (Tursunbayeva, 2019). Human interactive technologies enable physicians and nurses to share the patient's medical history, treatment plan, medication, and other relevant information that might enhance the quality of decisions by other

professionals. As a result, the shortened length of the hospital stay reduces the amount of time ED staff spends at the workplace. Nurses will have more flexible time schedules to spend with their families and to take care of themselves.

Medical staff can use different technologies to contact discharged patients to ensure they are taking care of themselves properly. Such opportunities rejuvenate employees, motivate them to tackle each workday with positivity, and inspire commitment to deliver the best care for maximum value (Wager et al., 2017). Further, interactive technology allows ED staff to focus on patients who need real help instead of those with non-clinical requests.

Technology also aids with the recruitment of knowledgeable and skilled employees with proven records of quality service delivery. It opens doors to exceptional expertise through advertisements. Technology allows hospitals to initiate cost-effective measures when searching for employees who can fill existing vacancies (Tursunbayeva, 2019). In doing so, they reduce the time taken to hire new staff, prevent extensive labor shortages that compromise the quality of delivered services, and ensure employees have enough work-life balance. The fact that technological implementations also reduce the financial resources needed in the HR department means that hospitals can redirect such funds towards value maximization.

The rise of predictive analytical tools enables hospitals to assess the cognitive, cultural, and behavioral characteristics of the nurses during hiring to determine which people are likely to fit into the organization’s culture (Scaglione, 2019). These tools compare individual capabilities with the work environment to match recruits with jobs, resulting in a gain of optimal performance, whether in the primary care unit, the intensive care unit, or emergency units. Such actions match nurses with responsibilities they are likely to deliver maximally, enhance workplace diversity and motivation, and improve the overall patient satisfaction scores.

One of the factors that influence nurses is job satisfaction which is based on their perception of how much control they have over their work environments. This control is often analyzed from the perspectives of patient assignments and power. Healthcare technologies have prompted organizations to change from paper-based mechanisms to internet-based platforms (Tursunbayeva, 2019). The latter has varied benefits, including increased workplace flexibility as nurses and other professionals can monitor their schedules wherever they are and keep abreast of changes in scheduling. If a nurse is less likely to report to work, he or she can swap shifts with a co-worker just in time to ensure continuity in quality service delivery. This technique is useful in combating stress and unsettlement. Nurses can also manage some of their responsibilities remotely to deal with acuity issues.

HIT systems have improved staffing decisions within the ED by allowing ED managers to leverage clinical data when organizing schedules and selecting the number of nurses required for every shift (Werder, 2015). These individuals use information related to workplace workload to oversee the equitable distribution of duties and responsibilities. This technique eliminates chances of assigning people excessive workloads that will lead to burnouts, eventually. Technologies also encourage hospital managers to focus more on employee growth opportunities.

Today's nurses do not work in the same organization for a long time. Contemporary workplaces are full of millennials who are always looking for better careers and well-paying opportunities. Hospitals can leverage information related to employee turnovers to improve the strategies used to attract and retain these skills over a longer time (Tursunbayeva et al., 2017). Technologies improve performance appraisal systems by facilitating just-in-time feedback, which means managers can monitor and report employee learning throughout their life at a

company. Hospital administrators can use the technologies to determine staff weak points and integrate response mechanisms that sit well with each persons' needs (Tursunbayeva et al., 2017). These methods allow hospitals to work on tools that are likely to ensure employees reach their maximum potentials.

Anticipated and Discovered Themes. The implementation of EHR supports the needs of many stakeholders in the healthcare arena, including doctors, patients, clinical staff, insurance companies, and policymakers (Aminpour et al., 2014). Gaps identified include poorly-managed electronic health records, limited access to administrative databases, the disintegration of healthcare, interruptions of the attending physicians, high staff turnover rates, computer viruses and crashes, malpractice litigations, and the ineffective processes that hospital administrators utilize to improve the adoption of evidence-based health information technologies.

Studies have ascertained a positive correlation between investing in health information technology, improved quality of adopted practices, and increased performance. As much as small, medium, and large hospitals continue to adopt HIT across their systems, many issues still need addressing concerning these healthcare technologies. For example, adoption rates are quite different. Hospitals are integrating CPOE, CDSS, and other software to manage information flow across their systems. However, it is still unclear how healthcare administrators will implement these tools to maximize the quality of health. Access to funds is a critical concern for hospitals desiring to integrate HIT across their systems. The biggest hurdle to such implementations is human needs and attributes. Feblowitz et al. (2017) indicated that EHR design might not be enough to eliminate adoption barriers. Hospital administrators must investigate billing compliance requirements, scribes, and voice recognition software (Feblowitz et al., 2017).

Even so, only a handful of studies have shown interest in tackling workflow strains that are commonly experienced after the adoption of IT across healthcare systems. Such shortfalls can introduce long-term problems if not managed properly. Besides, such issues suggest that investing in HIT does not guarantee all-round quality improvements unless organizations find a way to integrate a culture that promotes technological growth. More research should be conducted to determine forms of integrating technologies effectively and building a tech-oriented culture within workplaces. Further, a challenge of IT applications that will drag into the future focuses on how to integrate emerging technologies across core success areas within hospitals despite their distinctive attributes. Furthermore, rapid technological development results in increased tech components that employees must use in their daily responsibilities. Training is necessary for employees to acquire new medical knowledge that will improve workplace performance. Regular employee training would not be feasible financially. At the same time, employees in the ED do not have enough time to catch up with such information based on the demanding nature of their jobs. It is unclear how hospitals are equipping their employees with such knowledge and skills.

During the analysis of the data, five major themes were presented, including training, access to information (also referred to ease of access), troubleshooting, time, and vendor selection. Promoting value-based care in the emergency department starts with successful implementation and meaningful use of health information technology and this was evident in each participants response when they identified training, access to information, troubleshooting and time as key elements to successfully implementing the HIT. The present findings were supported by past literature in terms of what helps and hinders the adoption of HIT regarding promoting value-based care for the patients.

***Theme 1: Training*.** The findings suggest that the biggest barrier to fully recognizing the potential of the implemented HIT system was training, or lack of. Previous research has shown that training on HIT can influence providers' willingness and ability to utilize the implemented technology (Bredfeldt et al., 2013). Research has shown that when the staff was not provided adequate training, it caused errors in patient treatment. Errors in treatment have resulted in tens of million patients who suffer injury or death every year due to the administration of incorrect medical care (Deryahanoglu & Kocaoğlu, 2019). Research has shown that at the time of HIT implementation, 94% of physicians feel that their ability to use the HIT system could be improved (Rockswold & Finnell, 2010). Training was discussed in multiple responses in correlation to selecting the right vendor. The vendor that builds the new system, or installs the new software was important to the healthcare facility as they would provide initial training, however the bulk of the training will fall on subject matter experts (SMEs), developers and analysts and the end users. The SMEs include staff from various departments trained to provide IT support during the implementation project. Research has shown that when these super-users are identified early and given a robust and thorough training, they were able to serve as additional resources during and after implementation (Weathers & Esper, 2013).

***Theme 2: Time*.** Consistent with previous research, the best way to move the patients through the emergency department, following the input/throughput/output model, the staff must be well trained in the new system, which relates to the next major theme, time. The less time it takes the staff to triage the patient and enter the patient data (input), the quicker the patient can be in a bed and seen by a doctor (throughput). The quicker the patient is in the bed, the quicker they can be diagnosed, treated then admitted or discharged (output). The findings of this data are consistent with the natural resistance to change, especially in the health information technology

realm, but also shows how leaders can better leverage the technology they have or intend to implement in their facility. Ajami and Bagheri-Tadi (2013) stated that for healthcare facilities to maximize the benefits of the new HIT system, the users must take the time to study and learn the new system, otherwise, time may become a barrier to promoting value-based care in the emergency department.

Theme 3: Access to Information. The use of HIT became popular in hospitals with the passing of the Health Information Technology for Economic and Clinical Health (HITECH) Act into law (Witten, 2018), allowing hospitals and health workers to effectively use the technology in their workplaces. Ease of access to patient information was identified as a major theme in this data collection. Past literature has discussed the many benefits of realizing the full potential of any HIT system. In the ED, a patient's health history could be instrumental in assisting a physician to assess the most appropriate care needed after referencing the patient's medical trend. An updated health record with a patient's documented health history makes it easier to provide physician assistance. Castillo (2019) noted that having a patient's records entails having a written story that one can read even in the absence of the author. In case of an emergency where the patient is unconscious or unresponsive, an electronic medical record is the only reference that should guide nurses in administering care.

Theme 4: Troubleshooting. Troubleshooting refers to a problem-solving approach mostly used to address failed programs, processes, or systems (Kim, Coiera et al., 2017). And as such, troubleshooting was identified as a major theme in this data. Troubleshooting is also used to improve the performance of a given structure, such as healthcare. The approach can facilitate the adoption of health improvement technology because it focuses on problem identification and identifies possible solutions. Gabriel et al. (2014) reported 48% of hospitals that received

technical support (troubleshooting assistance) experienced less workflow and staffing challenges, whereas 62% of the hospitals that did not receive assistance reported significant challenges with the HIT system, staff and patient satisfaction. Fisk et al. (2015) reported the healthcare facilities experience maximum results when assisted by adequate technical support and training.

***Theme 5: Vendor Selection*.** Vendor involvement was a minor, but very critical, theme identified in the data. Vendor selection was mentioned throughout the data as it correlated to training, troubleshooting, and time. The participants mentioned selecting the right vendor played a role in developing, launching, and supporting the implementation process. Multiple participants mentioned vendor selection in the training process was critical to the successful implementation of HIT and subsequently better promotion of value-based care. These concerns are supported by recent literature by Singh et al. (2016) who reported that the multifaceted and complex nature of HIT implementation take collaboration and mutual respect for all the parties involved, including the healthcare facility, the stakeholders, the end users and the vendor. Ford et al. (2016) mentioned that facilities have more success with implementation and reaching meaningful use when the vendor selection aligns with the facility's decision-making structures.

Summary of the Literature Review

Value is concerned with the quality of care. Even though technology enhances healthcare, there is a slowness in its adoption in most medical facilities. Bridging the gap between the uses of available technology and improving the quality of healthcare in the ED department requires an investment in both human resources and a database system that can hold the patients' health history. As the emphasis is placed in value-based care as opposed to volume-based care, the realization of value-based care cannot happen without embracing information technology in the ED. Integrating healthcare systems is essential as it facilitates sharing a patient's medical

information and making it accessible to physicians and other medical practitioners. This promotes effective administration of care.

Value-based care models seek to address problems associated with depreciated care and rising costs of accessing healthcare by proposing effective and efficient strategies and programs. These include formulating a multidisciplinary team, evolving through systematic changes, ensuring resource availability and proper use of resources, and performing regular evaluations to identify and correct flaws. CAS are structures designed to help organizational leaders, clinical and non-clinical staff members to recognize patterns and their complexities when analyzing issues arising within organizations. In doing so, it allows them to deviate from the traditional cause and effect strategies used in solving problems and foster the adoption of tactics that can help tackle the issues arising from the complex and dynamic business world.

Today, healthcare providers use different technologies to diagnose, treat, monitor, and review processes to provide quality and valuable services. Technology allows physicians, nurses, and other hospital staff to work more efficiently by linking employees with appropriate jobs, improving scheduling, providing work-life balance, and reducing the need for manual jobs. Individuals can focus on their patients to deliver quality services because these tools help them allocate an adequate amount of time towards essential tasks. ED staff is likely to be more satisfied with their jobs, thus opting to remain committed to the employer.

Quality service delivery contributes to a happy workforce and healthy patients. Leveraging health information technologies within the ED improves nurse placement functions and scheduling. It enhances the perceived degree of control they have towards their work environments and schedules. These measures address the challenges of high turnovers. Computerization helps hospitals to cut wastes by enhancing registration procedures, reducing

treatment process times, and developing efficient staffing schedules. Healthcare technologies help reduce staff turnovers with their direct impact on efficiency.

The most crucial function in the ED is patient flow management. Poor patient flows lead to overcrowding, which compromises the quality of hospital setups and the ability to render quality services. It also implies that patients cannot receive proper medical attention at the right time because they must wait for a long-time before seeing the doctor. Companies must then formulate and adopt different patient flow strategies to reduce overcrowding.

Summary of Section 1 and Transition

In this qualitative single case study, the decision-making process behind HIT implementation to deliver value-based care to emergency department patients was explored. Section 1 contains the foundation of this study, including the purpose and problem statement, which discussed the central tenet of this study. Section 1 also includes the nature of the study, the research questions, and the conceptual frameworks used to guide this research. This section discussed the significance of the study, including gaps, biblical integration, and its relationship to the field of business administration. Section 1 concluded with a review of academic literature that discussed technology in the emergency department, EHRs, RFID and their benefits to healthcare, understanding the complex adaptive systems and input/throughput/output models, and how these technologies contribute to value-based care. The academic literature review also discusses gaps in the existing literature, as well as discovered themes.

Section 2: The Project

Section 2 includes an in-depth review of the methodology and design of the study. An explanation was provided for the choice to use a qualitative case study over other methodologies for this project. In addition to these explanations, Section 2 discussed the steps taken to choose participants, the data collection process and analysis, as well as the steps taken to ensure reliability and validity of research findings. In addition to the participants, Section 2 discussed the role of the researcher. Section 2 also discussed ethical considerations in research, methods of obtaining informed consent, how to protect participants, and maintaining their anonymity. Section 2 concludes with a transition and summary statement, leading into Section 3.

Purpose Statement

The purpose of this qualitative case study was to explore the ineffective use of healthcare information technology by hospital administrators in Georgia's emergency departments resulting in a lack of focus on value-based care. In 2009 the Health Information Technology for Economic and Clinical Health (HITECH) Act became law. Compliance with the requirements of the HITECH Act enforces adherence to adequate care and evidence-based clinical guidelines. Kruse and Beane (2018) conducted a systematic review that discussed and confirmed that “in this review, 81% demonstrated improved medical outcomes in terms of efficiency or effectiveness as a result of HIT adoption” (p. e41). Emergency department serve huge populations daily, suggesting a considerable challenge in their efforts to fulfill the needs of population health effectively (Karahanna et al., 2019). The employment of the right technologies of healthcare management, such as EHRs, promises enormous value in improvements to the quality of healthcare delivered, workflow, costs of healthcare, and the safety of data storage.

Healthcare leadership has a responsibility to manage the delivery of care and the environments, culture, and resources that apply such delivery. An essential aspect of the responsibilities of leadership in a healthcare setting is to influence and cope with change to promote the effectiveness of organizational methods and models in fulfilling emerging needs and achieving desirable health outcomes.

Role of the Researcher

In the study, the role of the researcher is vital. The role of the researcher is to gather and analyze data on the topic studied. During the data collection, the researcher ensured adherence to the guidelines and principles of ethics during data collection. The researcher was responsible for recognizing personal biases and reducing threats that may affect the findings of the study (Roulston & Shelton, 2015). The researcher was responsible for participant recruitment, including initial contact through emails. In qualitative research such as this one, the researcher is the primary instrument for data collection and processing, and may utilize face-to-face, virtual or telephone interviews, or questionnaires to explore participants' perceptions to perform the study (Fusch & Ness, 2015). The researcher collected data through semi-structured, open-ended questions as a safeguard against bias. Serving as the primary data collection instrument the researcher analyzed collected data on the decision-making processes for choosing when and what EHR to implement in the emergency department. The researcher did not offer incentives for participation in this study.

Roulston and Shelton (2015) stated when the researcher is the primary instrument, there could be the possibility of bias due to the unpredictable nature of participant interactions. Personal perspectives or biases could unknowingly integrate themselves into the research process and data collection, producing skewed data results (Lau, 2015). It is essential for the researcher

to identify and understand how personal worldviews inform the study and research methods used in an assessment during the research process. Having worked in the healthcare field, and having firsthand experience using HIT in the urgent care and emergency department setting could potentially influence the research findings. Prior to this study, the researcher did not develop or maintained a personal or professional relationship with the participants, or any supervisory relationship with the participants or position of authority within the healthcare facilities studied. After this study concludes, there will be no ongoing personal or professional relationship with the participants, or any supervisory relationship with the participants or position of authority within the healthcare facilities. The characteristics of the researcher could also influence the selection of participants of this study (Probst, 2015). In this study, the research question process included surveying other healthcare professionals, which could include biases relating to the knowledge bases of both the participant and researcher.

To mitigate the possibility of biases in this study, research has suggested using a reflexive journal. The use of a reflexive journal is to encourage the researcher to study and understand their own "presuppositions, choices, experiences, and actions during the research process" (Ortlipp, 2008, p. 695). During this research project, the researcher maintained a reflexive journal to document awareness of personal experiences and views concerning the use of HIT that could present bias and affect the interpretation of the information gathered. Mason-Bish (2019) described using reflexivity as a process of self-reflection designed to allow the researcher to take responsibility for personal awareness such as experiences and beliefs. Darawsheh (2014) identified the primary outcomes of using a reflexive journal as one of maintaining transparency and altering processes during research to ensure validity of findings.

Adhering to ethical principles set forth in research guidelines is a vital component of any research process (Vilma, 2018). The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research created the Belmont Report for the protection of human subjects of research. The researcher managed personal biases by observing the Belmont principles of respect for persons, beneficence, and justice (Office for Human Research Protections, 2016). Anabo et al. (2019), referencing the Belmont Report Protocol, outlined ethical research requirements as being grounded in moral principles in relation to research involving human subjects which acts as a guidepost for analyzing ethical concerns associated with research. The general principles outlined in the Belmont Report include (a) respect for human subjects including obtaining informed consent, (b) beneficence as it relates to assessing risks vs. benefit, and (c) justice as it pertains to the selection of participants for this study (Anabo et al., 2019). In this study, the researcher maintained professionalism within the confines of the Belmont principles to protect the rights of the research participants.

The researcher collected data anonymously via secured online survey. Due to the nature of data collection, participants reviewed a consent page before being allowed to move forward into the survey questions. The consent form provided the participants in the study with relevant and factual information explaining the risks and benefits associated with the study to ensure they are making an informed decision. Hammersley (2013) noted the importance of maintaining the confidentiality of the participants and respecting their rights to refuse to participate or withdraw from the study without consequences. The participants selected for this study will not be from a vulnerable population.

Research Methodology

Since the focus of this study was to explore leadership decision making when implementing HIT in the emergency department to promote value-based care, a qualitative case study was the most appropriate. In a qualitative study, the researcher can gain a deeper understanding of when and how a phenomenon occurs in a setting (Sawatsky et al., 2019). The central concepts of this study will include the complex adaptive theory and Input/Throughput/Output Model as defined by Welsh (2014) and Asplin et al. (2003), respectively. The advanced nature of HIT is not a phenomenon, but detailed information collected from participants added to the body of knowledge on promoting value-based care by decreasing and preventing crowding in the emergency department.

Discussion of Flexible Design

A flexible design in research is one that allows for provisional feedback of information that may change the trajectory of the research study (Creswell, 2014). The flexibility of this study allows the researcher to ask open-ended questions, which allows the participants to respond in their own words, opposed to answering just yes or no. Flexibility in the research is demonstrated by the opportunity for the researcher to tailor subsequent or follow up questions based on the participants' initial responses. In this study, the researcher asked nine open-ended questions in the same order for each person. Due to the anonymous nature of the data collection, the opportunity to ask follow-up questions was not available.

Discussion of Qualitative Method

For this study, the researcher used a qualitative research method to explore the strategies healthcare leaders might use when determining what HIT to implement in the ED to promote value-based care for the patients. Qualitative research facilitates an inductive approach, enabling

researchers to employ open-ended questions of inquiry to identify and understand the research phenomenon as experienced by the participants (Yin, 2009). Qualitative researchers share a constructivist worldview through which constructivists define reality as a mental construct that can be subjective (Berg & Lune, 2012). Using the Constructivist Theory, this qualitative research study explained the phenomenon of ineffective leverage of HIT in hospital EDs by analyzing the experiences of the participants using diverse data collecting agents. This qualitative research allows the researcher to immerse themselves into the phenomenon to gain a complete experience of value-based care in the ED as it relates to the CAS framework and the input/throughput/output model by exploring the interconnectedness and multidisciplinary interactions required for the system to function together (Bircher & Kuruvilla, 2014).

Discussion of Methods for Triangulation

The term data source triangulation implies that multiple sources are combined to provide a balanced insight to a single phenomenon being studied (Clark et al., 2014). Data source triangulation involves utilizing different types of people, including individuals, groups, families, and communities, to gain multiple perspectives and validation of data (Carter et al., 2014). While this study did not combine multiple sources of data from one place, this data were collected using one source coming from multiple locations, each without the acknowledgment of the other participants. This increased the dependability and credibility of the information

Summary of Research Methodology

To obtain research quality and validity, data saturation is key (Fofana et al., 2020; Fusch & Ness, 2015). Data saturation is the point in data collection where no new information emerges from additional interviews (Fofana et al., 2020; Saunders et al., 2018). Researchers posited that data saturation occurs at different levels in qualitative research. The sample size for qualitative

research depends on the attainment of data saturation, however O'Reilly and Parker (2013) maintained that many studies aim for data or theoretical saturation but fail to completely achieve it. Saunders et al. (2018) argued because data saturation does not occur with just one additional interview, the previous interviews become richer or more insightful. Therefore, for this study, the researcher attempted to reach theoretical data saturation by collecting surveys until the surveys yielded no new information or patterns.

Participants

Qualitative research involves the researcher establishing a set of operational boundaries such as inclusion and exclusion criteria to set a boundary for population size (Ranney et al., 2015; Yin, 2009). The researcher used a purposive sampling technique to identify participants knowledgeable with the decision-making method used to approve or deny the implementation of HIT in the emergency department. Purposefully selecting participants with the expertise and experience in the research topic facilitates the collection of data that adequately represents the phenomenon under study (McIntosh & Morse, 2015). Robinson (2014) discussed the importance of being intentional in the selection of participants who have knowledge in the phenomenon being studied, as they can provide a valuable, firsthand description of their experience as it relates to the research topic. To gain the most relevant, in-depth information relating to the research topic, the researcher selected participants that met the following eligibility criteria: (1) Healthcare leaders from the executive suite that have first-hand experience in decision-making processes for their healthcare facility and (2) Clinical leaders working in the emergency department with first-hand experience using HIT.

Obtaining access to research participants was a tedious, uncomfortable task that required time and dedication. For this study, the researcher gained access to an online group of doctoral

students, graduates and professionals across multiple career fields. The researcher filtered out unqualified participants with a list of predetermined qualifications. Qualified participants were invited to participate via a secured survey link where they will attest to meeting the minimum qualifications.

Population and Sampling

For this case study, the researcher used a purposive sample strategy to select participants for this research. Purposive sampling in qualitative research is the process of selecting applicants that may be most affected by a specific issue or have the most first-hand knowledge of the phenomenon studied (Valerio et al., 2016).

Discussion of Population

The researcher managed participant recruitment through a social media forum. During the initial request, the researcher provided each of the participants with a clear account of the purpose of the study, the estimated time commitment for study participation, and an informed consent form as a requirement to participate. The participants for this study were healthcare leaders from Georgia emergency departments. The chosen participants consisted of members such as chief compliance and privacy officer, chief quality and patient officer, CEO, CFO, CIO and CRO. The researcher selected participants that met the following eligibility criteria: (1) Healthcare leaders from the executive suite that have first-hand experience in decision-making processes for their healthcare facility and (2) clinical leaders working in the emergency department with first-hand experience using HIT.

The participants selected for this study have first-hand knowledge of the decision-making process as it pertains to what HIT is best suited to promote value-based care. These same leaders have knowledge and make the determination for what HIT is implemented in the hospital

emergency department. The clinical leaders of the ED have first-hand experience as the end users of the HIT. Participant experience in HIT will assist the researcher with collecting and analyzing relevant data related to the phenomenon studied.

Discussion of Sampling

The survey questions consisted of semi-structured questions. Semi-structured questions are open-ended questions to facilitate the flow of information, as opposed to yes/no questions. Semi-structured questions allow the participant the flexibility to continue providing details specific to the phenomenon being studied (McIntosh & Morse, 2015). Robinson (2014) noted the importance of probing questions as they allow the researcher to develop a clearer and deeper understanding of participants' responses and the phenomenon studied.

Data saturation can guide the researchers' sample selection during the data collection process. Researchers have determined that data saturation can drive sample size (Tran et al., 2017). Depending on the scope of the research, sample sizes can vary widely in qualitative research and as such, there is no universally accepted criteria to determine what is the exact, right sample size (Hancock et al., 2016; Saunders et al., 2018; Tran et al., 2017). In their study of mental health in the emergency department, Shefer et al. (2014) used 39 participants, while Flink et al. (2012) used 20 participants. Saurman et al. (2015) sent invitations for participation to 169 individuals and used just 12 participants. This online forum consists of nearly 300,000 members across every field and occupation, within this group there is a subsection of nearly 75,000 members working in the medical field. Of those members, this researcher looked for only 50 qualified participants and received responses from 30.

Summary of Population and Sampling

Complete data saturation and its corresponding sample size has been heavily debated amongst qualitative studies (Boddy, 2016; Marshall et al., 2013). Qualitative studies present the flexibility of using smaller sample sizes as opposed to quantitative studies. Qualitative studies can use smaller sample sizes due to the primary focus of the study being to understand the complexity, depth, origin, or variation of a phenomenon (Boddy, 2016; Gentles et al., 2016). For this research study, the researcher selected a preliminary sample size of 50 participants, as recommended by Boddy (2016). The researcher was able to reach data saturation after 30 participants.

Data Collection and Organization

Data collection in qualitative research requires the researcher to use multiple data collection sources to strengthen the validity of the research (Yin, 2009). Case studies provide the researcher with the opportunity to match multiple forms of data, allowing for a more in-depth understanding of a phenomenon, which is important in the healthcare field where the decision-making process may be difficult to evaluate (Runfola et al., 2017).

Data Collection Plan

For this research study, research involved collecting data through a secured online survey. These surveys served as the primary data collection plan. The data are structured as open-ended questions. Before beginning to answer the survey questions, the participants were given an informed consent form to review and agree to.

Instruments

In a case study, researchers routinely utilize various data collection methods. In this study, the researcher served as the primary data collection instrument, using semi-structured

survey questions as the primary data source. The surveys were collected from various qualified participants from the emergency department and executive suite in Georgia healthcare facilities.

This research study consisted of nine semi-structured survey questions, which allowed the participants to openly discuss matters that are of importance to them regarding the topic researched. Semi-structured questions are meant to be a personal and intimate encounter in which open, direct, verbal questions are used to elicit detailed narratives and stories. The researcher asked the same nine questions to maintain consistency and ensure trustworthiness of the data collected. Cope (2014) posited that member-checking promotes the accuracy of the data and validity of the findings. Member-checking is a qualitative research process in which the researcher shares preliminary findings with the participants to ensure data accuracy (Cho & Lee, 2014; Naidu & Prose, 2018). Due to the anonymous nature of the data collection, participants will have to request a copy of the finding summary at the completion of the dissertation manuscript.

Data Organization Plan

The researcher used the NVivo digital software to organize the collected data. Using digital software such as NVivo helps sort, organize, and classify data. Organized data enables the researcher to better interpret the data and identify patterns to better answer the research questions (Castleberry, 2014). The NVivo software is designed to organize the data; however, setting the codes and data interpretation is up to the researcher. The researcher did not utilize a participant tracking sheet for this study. The researcher entered the codes and themes identified into the NVivo software to organize and analyze the research data. The data were collected via online survey, this helped to ensure the anonymity of the participants.

The survey data were stored on a personal password protected laptop, accessible by only the researcher. The digital data collected are also backed up to an external hard drive. Both the hard copy and digital data will be stored in a locked drawer for five years from the conclusion of the doctoral manuscript. After which time the hard copy data will be shredded and the external hard drive will be wiped of all digital files.

Summary of Data Collection and Organization

The use of semi-structured surveys allows the researcher and participants the flexibility to deviate from the predetermined questions, enabling the opportunity to ask probing questions and the introduction of new information, resulting in a rich, in-depth collection of data (McIntosh & Morse, 2015).

Data Analysis

The collected data were analyzed to help answer the research question of how healthcare leaders can better leverage technology to increase focus on value-based care in the emergency department. The process of examining and processing qualitative research data comprises various steps to comprehend and absorb the data collected. Different methods have been formulated to be utilized in data analysis. However, the standard foundation is on deconstructing and reconstructing the chunks of collected data to point out the codes and themes to enhance processing and comprehension of participants' ideologies and perceptions regarding the research (Noble & Smith, 2014; Yin, 2009). As proposed by Patton (1990) and Merriam (1988), the processing and analysis of data provides a clear understanding of the participants' characters and attributes regarding the study and enables the researcher to connect well with the study group. Thomas (2006) described 5 stages of the coding process in inductive analysis, which are (1) initial reading of text, (2) identification of text related to study objectives, (3) creating

labels/codes, (4) reducing overlap in data categories, and (5) compiling data into relative themes and categories.

To understand the study subject, the researcher will prepare the data for analysis, by organizing and coding to attain the themes and patterns and interpretation of the findings (Elo, 2014). Ethical guidelines formulated by the Belmont Report can be used to protect the research (Vilma, 2018). These are:

Respecting the study subjects by getting their consent to participate in the study.

Beneficence as connected to the risks vs. benefits.

Justice, as it pertains to the study subjects' selection (Anabo et al., 2019).

The researcher conducted a content analysis of the data from semi-structured surveys, which was comprised of open-ended questions to facilitate information flow (McIntosh & Morse, 2015). To mitigate any bias in the research, the researcher used standardized questions for each participant, asking the same questions in the same order for each participant. Also, the researcher consciously avoided any personal researcher bias during analysis of information. Harvey (2015) mentioned that in qualitative research studies, the transcription method improves the credibility, validity, and accuracy of the study. Bircher and Kuruvilla (2014) suggested the constructivist theory in this research, whereby the input-throughput-output technique is utilized to immerse the researcher into the data to gain full familiarity. The interview protocol outlined in Appendix A was utilized to promote the findings' consistency and validity (Yin, 2009).

During analysis, the researcher drew conclusions from data by relying on theoretical and conceptual propositions, using systematic techniques, exploring any opposing explanations, and abstracting concepts from each unit of analysis (Chun Tie et al., 2019). I explored the research questions systematically: (a) the researcher will collect data via surveys, (b) enact data

triangulation, (e) code textual data manually and then analyze using NVivo 12 software (*NVivo Transcription*, 2020), (f) review emerging information for each case for data saturation, and (g) after data analysis the researcher will format each case into a Word document.

Emergent Ideas

Memoing is the process of recording reflective notes regarding what the researcher is learning during data analysis (Ortlipp, 2008). As the surveys were submitted, the surveys were printed as well as loading the results into the NVivo software. I started by reading the printed surveys to get a better understanding of what the participants were trying to convey. I started highlighting repetitive words after collecting and reading all of the surveys, I used the NVivo software to create a word frequency table to confirm the words that became emergent ideas to me. NVivo also helped to determine how much weight each of those identified ideas carried.

Coding Process

To maintain the privacy and respect for the participants' rights the survey link did not collect any personal details such as names, email address or IP addresses, this will help to maintain participant anonymity (Gumede et al., 2019; Miracle, 2016; Zink et al., 2005). The researcher used bracketing and epoché techniques in addition to reflexive journaling to control and mitigate bias in the collected data. For the final steps of the inductive analysis, the researcher used the NVivo computer software system in data analysis and identification of recurring themes in the collected data, including the participants' organizational reports and guidelines and reflexive journaling to attain more understanding of the measures utilized in implementations of the HIT systems. Castleberry (2014) affirmed that NVivo software enhances the management, organization, and analysis of the data collected as utilized in data analysis. The software

facilitated the identification of the relationships between different variables of data and enhance consistency.

NVivo software is designed to help sort, manage, and understand text data, while setting the codes and integrating the data are done by the researcher. The researcher identified the codes and classified similar and repetitious patterns into clear themes to assist in interpreting the data. Codes were assigned to each participant in the study, themes will be assigned to each of the codes. The intent of the researcher was to create overarching experiences, or themes. During the process of assigning codes and themes, the researcher thoroughly read and listened to the data to understand how each of the experiences related to one another. In this case study, the codes were mutually exclusive because each piece of data were only assigned to one code. This approach provided an automatic epoché in that it required the researcher to assign every piece of data to a theme, thereby eliminating loss of data to researcher bias.

Data Representation

The goal was to display all the data in a concise, easy to read manner. I displayed a table which shows the alignment of each participant question with the study's research questions, and the themes identified from participant responses to each question on the questionnaire. I presented the results of the study by emergent themes and their relevance to each research question. The themes that emerged from the data analysis included training, access to information, time, troubleshooting and vendor selection. A second table depicts the references coded per theme identified. References coded indicates the number of data references that were coded to the identified theme and the percent coverage of the data file that the coding presents. The last table identifies the word frequency of the survey data. The word frequency reflects the

major themes identified in the analysis by displaying the number of times the theme and similar words (i.e., train, trained and training) appear alongside the weighted percentage of those words.

Analysis for Triangulation

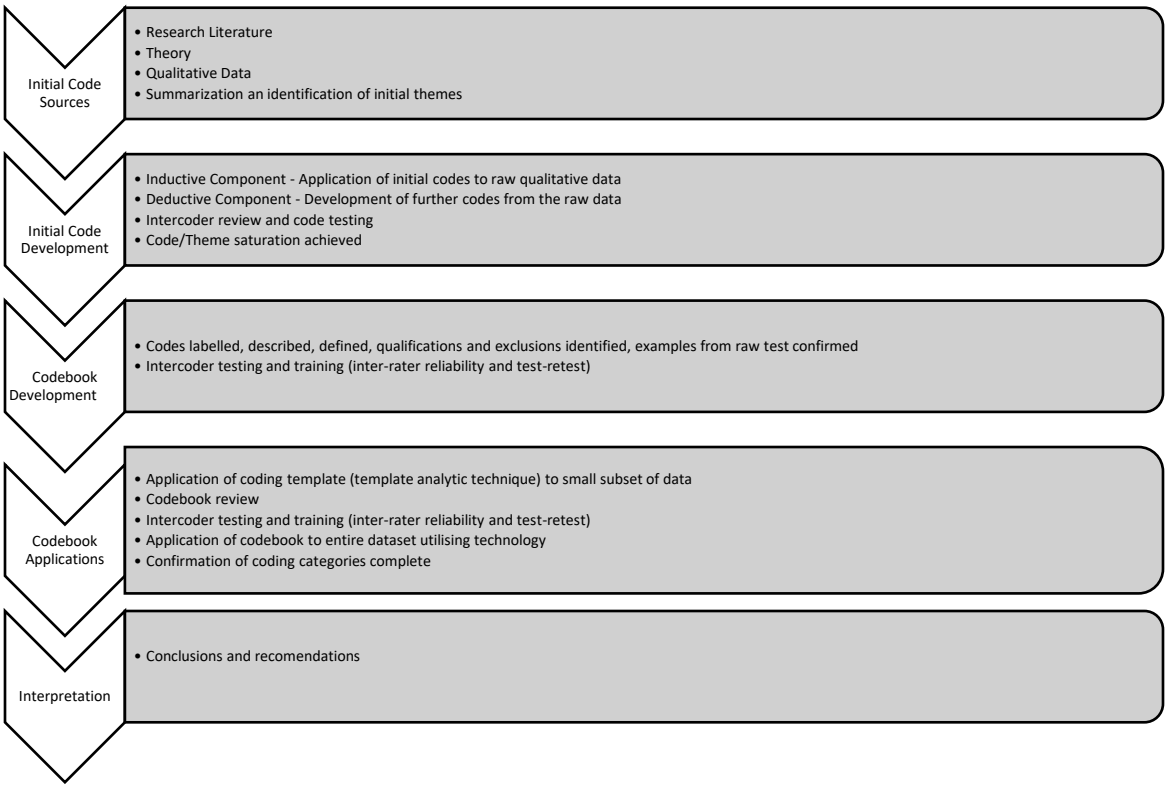
The data for this study was collected anonymously via online secured survey, coming from multiple sources across the state of Georgia, and as such, I used data source triangulation to develop my triangulation methods for this study. In this case, the data source triangulation method was used to obtain data from multiple sources to ensure a more complete perspective was obtained. The multiple sources in this study came from healthcare leaders who have held various positions in relation to a theme or a decision-making process. This strengthened the results of the study regarding actors from different positions in different facilities providing similar results. The same is true of the results from the participants who work in different emergency departments, under different management and with different HIT systems.

Summary of Data Analysis

Data interpretation requires reflexivity of the researcher, in the sense that the researcher must be aware of any bias to conduct thorough analysis. Recognizing bias on the part of the researcher may lead to seeking disconfirming evidence and other challenges to the emergent theory. As a sign of trustworthiness in the results, the researcher will scrutinize the data from the surveys and use the findings to identify any disconfirming cases. Identification of disconfirming cases ensures the theory generated from the data is critically informed and plausible given all the evidence collected (Booth et al., 2013). Therefore, the researcher scrutinized the data from the surveys and use the findings to answer the research questions.

Figure 3

5 Stages of the Coding Process in Inductive Analysis (Roberts et al., 2019)



Reliability and Validity

A vital element in qualitative studies is the establishment of reliability and validity, also known as the quality and trustworthiness of the research (Noble & Smith, 2015). Whittemore et al. (2001) stated that the reliability and validity of the research should be considered both before and after data collection. Previous researchers have established four criteria needed to establish reliability and validity in qualitative research: credibility, transferability, dependability, and confirmability (Hayashi et al., 2019; Whittemore et al., 2001). Researchers use recognizable validations techniques to ensure reliability and validity of the research being conducted such as, member-checking, triangulation, reflexivity and data-saturation to ensure a thorough description of the phenomenon being studied (Cope, 2014; Lakshmi & Mohideen, 2013).

Reliability

Yin (2009) noted the primary goal of establishing reliability in research is to promote trustworthiness of the research. Ensuring the results of a qualitative study involves using procedures of reliability (MacPhail et al., 2016). One reliability process involves aligning research questions in the same order for each participant during the survey. One way for researchers to demonstrate reliability in research is to ensure the study can be replicated or transferred (Merriam & Tisdell, 2016). Reliability in research is described as the consistent checking and rechecking data to ensure correctness (Leung, 2015; Power & Gendron, 2015). Documenting the research process from beginning to end is a prerequisite for ensuring reliability in qualitative research, therefore the researcher thoroughly documented the research process to establish reliability and validity.

Validity

The validity of qualitative research indicates the degree to which findings accurately represent the phenomenon explored (Yates & Leggett, 2016). Content validity may be established by respondent validity, or member-checking, which affords the participants the chance to review the data before submission (Harvey, 2015; Yates & Leggett, 2016). Multiple methods of data collection such as researcher notes, memos, and journal entries further establish content validity through data triangulation. The four dimensions indicated by previous researchers – credibility, transferability, dependability, and confirmability – form the framework for determining validity of qualitative research being conducted (Cope, 2014; Houghton et al., 2013; Whittemore et al., 2001).

Researchers establish validity in their research by demonstrating integrity, congruence of methodological processes and accuracy in the analysis of the data findings (Noble & Smith,

2015). When ensuring validity in research, the researcher uses congruence to establish the connection between aspects of the study such as connecting the study being conducted with past literature, research questions to the data collection methods and analysis, and research findings with the implications of this study (Cope, 2014). To ensure validity in this study, the researcher used member-checking, reflexivity, and bracketing. Due to the anonymous nature of the data collection, for the researcher to participate in member-checking, participants will have to request a copy of the finding summary at the completion of the dissertation manuscript.

Credibility

One critical aspect of any study is the result of credibility and accuracy that must be presented in the results (Merriam & Tisdell, 2016). Yin (2009) noted that case studies are designed to include analytic generalization where the 'why' and 'how' answers are researched and answered. Yin (2009) posited qualitative case study methods include inductive process, descriptive data collection, life experiences, perceptions, and life events. Previous qualitative researchers agree face-to-face interviews provide credibility (Lavrakas, 2008; Yin, 2009).

An interview protocol can ensure consistency during the different interviews. For this study, the researcher followed an established interview protocol (Appendix A), which ensured a standardized format in the surveys during data collection and for subsequent reflexive journal notes. The researcher also created an audit trail to provide an account of all research activities and decisions to show how data were collected, recorded, and analyzed. An audit trail demonstrates thoughtful identification and application of research strategies in the study (Anderson, 2017). To further demonstrate credibility in this research, the researcher constructed and utilize a Case Study Protocol (Appendix B) prior to data collection which contained the survey instrument, procedures, and general guidelines. To establish credibility in this qualitative

case study, the researcher used a standardized approach to data collection and analysis to discuss the in-depth and genuine decisions behind HIT determination for the healthcare facility.

Transferability

Transferability refers to the external validity (Thomas & Magilvy, 2011) and is an important factor of a qualitative study (Yin, 2009). Transferability occurs when the results of the qualitative study can be applied to settings in which the study did not occur; results can be applied to multiple situations, contexts, populations, and times (Cope, 2014; Marais, 2017). Transferability can also occur by using rich, thick descriptive data and purposive sampling. The researcher included rich and extensive contextual and methodological details in the report, elucidating all research processes from data collection to the final doctoral manuscript, which aids in replication of the study by other researchers. To enable transferability of this study, the researcher provided an in-depth description of all processes which conveyed a sense of the participants and their environment. Purposeful sampling was used in participant selection which allowed for the selection of individuals grounded on specific aims associated with answering the research questions of this study.

Due to the small sample size and the purposive sampling technique, transferability might be limited for this study, but not impossible. The study results could be applied to sister-hospitals under the same healthcare company and generalized to other hospitals in Georgia. Exemplars developed during this study could prove useful for other healthcare facilities looking to better understand the phenomenon of effectively leveraging technology to promote value-base care in their emergency department. For this study, the researcher established transferability by following an established interview protocol (see Appendix A) and by providing ample information to encourage valid interpretation of data results.

Dependability

In terms of qualitative studies, dependability is the stability and consistency of the research over time as replications of the study occur (Hays et al., 2016). The researcher can establish dependability in their research by following established procedures such as documenting an audit trail and maintaining a reflexive journal (Noble & Smith, 2015). An audit trail introduced to qualitative research by Lincoln and Guba (1985) is a method to enhance dependability and confirmability of the research. The audit trail for this study contained detailed descriptions of steps taken to determine method, design, population sample, study, data collection process, and data analysis procedures. The audit trail also included raw data, questionnaire review notes, memos, statements, articles, and documents used in the research. The audit trail included the use of a reflexive journal. To mitigate the possibility of biases in this study, research has suggested using a reflexive journal. The use of a reflexive journal is to encourage the researcher to study and understand their own "presuppositions, choices, experiences, and actions during the research process" (Ortlipp, 2008, p. 695). During this research project, the researcher maintained a reflexive journal to document awareness of personal experiences and views concerning the use of HIT that could present bias and affect the interpretation of the information gathered.

Confirmability

The concept of confirmability in qualitative research refers to the ability of others to confirm the findings; this occurs when credibility, transferability and dependability have been established (Thomas & Magilvy, 2011). Steps to ensure confirmability in the study are similar to those of credibility and dependability, including an audit trail, data triangulation, peer review and the use of reflexivity, bracketing and epoché (Lincoln & Guba, 1985). Following established

guidelines for data collection, analysis, and findings are essential to the confirmability of the study; the study should confirm the participants' reflections, not those of the researcher (Anney, 2014; Cope, 2014).

The use of a reflexive journal can contribute to the confirmability of this study by detailing the rich description, documenting the audit trail and providing additional proof that the researcher reflected on the data collection steps and the interpretation of that data (Anney, 2014). The use of a reflexive journal for this study included a printed version of surveys, personal biases that may stem from personal experiences in the healthcare field and any interests of the researcher that may potentially influence the steps, processes, choices or conclusions included in the study. To further establish the confirmability of this study, the researcher used purposive sampling for participant selection and member-checking to ensure the data were interpreted and reported correctly. The researcher used a reflexive journal to document all personal reflections and any bias that may arise related to the study, and an audit trail that documented all events that occur during data collection and analysis.

Data Saturation

Data saturation occurs when there is sufficient information to duplicate the study, the ability to attain additional information is no longer probable, and when further coding is no longer practical (Fusch & Ness, 2015). To obtain research reliability and validity, data saturation is key (Fofana et al., 2020). Data saturation is the point in data collection where no new information emerges from additional interviews (Fofana et al., 2020; Saunders et al., 2018). Researchers posited that data saturation occurs at different levels in qualitative research. Approximating the number of participants needed in a study to attain saturation relies on several factors, including data quality, scope of the research, nature of the issue, the quantity of relevant

information acquired from each participant, and the number of interviews per participant – thus if the researcher is able to ask probing questions during the initial interview to get deeper meaning, data saturation could be achieved early (Saunders et al., 2018). The sample size for qualitative research depends on the attainment of data saturation, however O'Reilly and Parker (2013) maintained that many studies aim for data or theoretical saturation but fail to completely achieve it. Saunders et al. (2018) argued that data saturation does not occur with 'just one additional interview,' rather the previous interviews become richer or more insightful. Therefore, for this study, the researcher attempted to reach theoretical data saturation by soliciting survey responses until new surveys no longer yield new information or patterns. The researcher was able to reach data saturation after reaching 30 participants.

Bracketing

Other methods used to control or mitigate biases in qualitative research are bracketing and epoché. Epoché and bracketing are conscious processes permitting the researcher to set aside firsthand experiences or beliefs concerning the issue under study, and to facilitate new knowledge concerning the study phenomenon (Sorsa et al., 2015). According to Baksh (2018) bracketing is a process that requires the researcher to intentionally set aside experiences with the phenomenon studied, before and during the research process. The challenging aspect of addressing personal biases is that bracketing requires putting aside personal biases (Berger, 2015), while reflexive journaling requires the researcher to thoroughly think about and examine personal biases (Darawsheh, 2014). Having worked in the healthcare field, but not in the role of authority or decision-making, the use of bracketing and epoché can helped to avoid making assumptions and judgments about the phenomenon.

Summary of Reliability and Validity

Yin (2009) explained that the failure to establish a foundation for the study during its design phase could negatively impact the analysis phase. Morse (2015) noted that the subjectivity of qualitative data, semi-structured data collection processes and the interpretive nature of data analysis threaten the validity of qualitative research. Researchers can help the establish internal validity of their study by acknowledging researcher bias through reflexivity, bracketing and epoché techniques, triangulation of data through multiple sources to analyze data findings, as well as using member-checking processes to ensure accurate interpretation by providing opportunities for participants to review data (Hayashi et al., 2019; Houghton et al., 2013; Leung, 2015).

Summary of Section 2 and Transition

Section 2 provided a summary of the method and design approach for this qualitative study. The purpose of this study and the research questions developed were used to drive the selection of the method and designed used. The interview protocol (Appendix A) describes the data collection process as semi-structured and open-ended survey questions to provide the general experiences with implementing HIT in the emergency department to promote value-base care. The interview protocol sheets directed the data imported into NVivo 12 software, which helped to organize, classify, code and cluster information in a sequential analysis process. The query abilities of NVivo 12 software will help uncover subtle trends through automated analysis (*NVivo Transcription*, 2020).

Section 3 will contain the findings from Section 2 including the expressed, lived-experiences and perceptions of the participants as they relate to the effective implementation of HIT to promote value-based care in their emergency department. Section 3 will include a

detailed description of the research findings based on data collection and analysis, the potential applications to professional practices, and recommendations for action and further studies. Section 3 will also include reflections and study conclusions.

Section 3: Application to Professional Practice and Implications for Change

Overview of the Study

The purpose of this qualitative single case study was to explore the ineffectiveness of health information technology utilization in the emergency department. In this study, I sought to answer the research questions regarding the ineffective use of healthcare information technology by hospital administrators in emergency departments across Georgia resulting in a lack of focus on value-based care. The research questions were:

- RQ1. What do healthcare administrators perceive as barriers to the effective use of technology in the emergency department?
    - RQ1a. What factors promote the adoption of healthcare information technology?
    - RQ1b. What factors prevent the adoption of healthcare information technology?
- RQ2. How can technology, such as electronic medical records, help providers establish and maintain value-based care in the emergency department?
- RQ3. How can ED clinical leaders utilize the Input/Throughput/Output Model as it relates to information technology to better understand the lack of value-based care in the emergency department based in ED crowding?
- RQ4. How can technology systems integrated into health care practices benefit patients and practitioners?

For this case study I used purposive sampling to select participants that would have direct knowledge of how implementation and adoption processes occur, as well as participants who use the implemented technology. Using purposive sampling, I was able to solicit data from 30 participants in Georgia healthcare facilities. The data were collected via secured online survey using semi-structured, open ended questions until I was able to reach data saturation. The

surveys were collected and analyzed using the interview protocol outlined in Appendix A. Because the data were collected online, the participants were able to submit their answers at a time and place convenient for them.

During the analysis of the data, five major themes were presented, including training, access to information (also referred to ease of access), troubleshooting, time and vendor selection. Promoting value-based care in the emergency department starts with successful implementation and meaningful use of health information technology and this was evident in each participants response when they identified training, access to information, troubleshooting and time as key elements to successfully implementing the HIT. The present findings were supported by past literature in terms of what helps and hinders the adoption of HIT regarding promoting value-based care for the patients. Section 3 includes a presentation of the findings, applications to professional practice, recommendations for further studies and reflections.

I organized the findings into themes that emerged from participants' responses to questions on the questionnaire. Data analysis began with verifying the research questions alignment to the participant questions and responses. The research findings were gathered from multiple participants who decided on when, how and what technology to implement, ranging from the hospital administrators, to include Chief Information Officer, Chief Financial Officer, Director of Quality and Protocol, and to the emergency room staff, i.e., Lead Nurse, Unit Secretary, and medical assistants who were directly affected by the implemented technology. I used the concept of value-based care (Zipfel et al., 2019) and the model of input/throughput/output (Asplin et al., 2003) as the conceptual lens through which I interpreted the findings of this study. Section 3 reflections include reflections of personal and professional growth and a Biblical perspective.

Presentation of the Findings

In this study, I sought to answer the research question regarding the ineffective use of healthcare information technology by hospital administrators in emergency departments across Georgia resulting in a lack of focus on value-based care. I used a purposive sampling technique to identify key decision makers from Georgia hospitals who have a say in making decisions and implementing HIT, who would be able to provide the data needed for the research. I requested a maximum of 50 participants, in total I received 30 survey responses. I reached data saturation at P30. A total of 50 individuals agreed to participate in the study. Of the 50 consenting individuals, 30 individuals completed and returned the study questionnaire. The 30 individuals consisted of members of the executive suite such as chief information officer, chief education and training officer, as well as members of the emergency department staff.

The data were aligned with Bengtsson four stages of data analysis which include decontextualization, recontextualization, categorization and compilation of the data. These four steps are used to identify themes, categorization, and organization to elicit meaning from the data to draw accurate conclusions (Bengtsson, 2016). I used the NVivo software to analyze the data which yielded five major themes.

Themes Discovered

In this study I organized the findings into themes that emerged from participants' responses to questions on the questionnaire. Data analysis began with verifying the research questions alignment to the participant questions and responses as shown in Table 1. Initial code creation occurred at the beginning of the NVivo data analysis and occurred throughout the data collection process to identify emerging themes. While coding and analyzing the data, I drew conclusions from data by relying on theoretical and conceptual propositions, using systematic

techniques, exploring any opposing explanations, and abstracting concepts from each unit of analysis. To mitigate bias in the research, I used standardized questions for each participant, the questions were ordered the same way on the survey for each participant. The interview protocol outlined in Appendix A was utilized to promote the findings' consistency and validity.

Table 1 shows the alignment of each participant question with the study's research questions, and the themes identified from participant responses to each question on the questionnaire. I present the results of the study by emergent themes and their relevance to each research question. The themes that emerged from the data analysis included training, access to information, time, troubleshooting and vendor selection.

Theme 1: Training. The act of teaching a person a new skill or type of behavior. The participants indicated having training is a fundamental aspect of building a culture of value-based care in the emergency department.

Theme 2: Access to Information. The ability to identify, obtain and make use of information in a timely and effective manner. Being able to access the patient information was discussed by participants as a necessary measure to effectively treat the patients.

Theme 3. Time. The participants indicted that time plays a crucial factor in implementation, as well as adoption of and adjustment to health information technology.

Theme 4: Troubleshooting. The ability to trace and correct faults in a technical or electrical system. Troubleshooting, or technical assistance, was identified as a required ability to continuously treat patients in the emergency department.

Theme 5: Vendor Selection. The act of choosing a vendor or company to build and/or install the new software systems. Vendor selection was discussed throughout the responses as it pertained to assisting in training, access to information and troubleshooting assistance.

Table 1

Research Questions, Participants Questions, Alignment, and Themes Identified

Research Question	Research Question (RQ) Alignment	Themes
1. What do healthcare administrators perceive as barriers to the effective use of technology in the emergency department?	RQ1	Training Access to Information Time Troubleshooting Vendor Selection
1a. What factors promote the adoption of healthcare information technology?	RQ1	Training Time Vendor Selection
1b. What factors prevent the adoption of healthcare information technology?	RQ1	Access to Information Troubleshooting
2. How can technology, such as electronic medical records, help providers establish and maintain value-based care in the emergency department?	RQ2	Access to Information Time
3. How can ED clinical leaders utilize the Input/Throughput/Output Model as it relates to information technology to better understand the lack of value-based care in the emergency department based in ED crowding?	RQ3	Access to Information Time Training
4. How can technology systems integrated into health care practices benefit patients and practitioners?	RQ4	Access to Information Time

Participant Question	Research Question (RQ) Alignment	Themes
1. What factors promote the adoption of healthcare information technology?	RQ1	Training Time Vendor Selection
1a. What factors prevent the adoption of healthcare information technology?	RQ1	Access to Information Troubleshooting
2. How can technology, such as electronic medical records, help providers establish and maintain value-based care in the emergency department?	RQ2	Access to Information Time

3. How can ED clinical leaders utilize the Input/Throughput/Output Model as it relates to information technology to better understand the lack of value-based care in the emergency department based in ED crowding?	RQ3	Access to Information Time Training
4. How can technology systems integrated into health care practices benefit patients and practitioners?	RQ4	Access to Information Time
5. As a healthcare leader what strategies did you use in identifying staff training needs and developing staff training programs to promote successful implementation of HIT systems?	RQ1, RQ4	Training Vendor Selection
6. What additional information can you provide to assist me in understanding how healthcare leaders can better promote value-based care in the emergency department?	RQ1	Training Access to Information Time
7. Any other input on the effectiveness of HIT in the emergency department?	RQ4	Vendor Selection Troubleshooting

Table 2

References Coded per Theme

Theme Name	References Coded	% Coverage
Training	30	20
Time	28	18.67
Access to Information	20	13.33
Troubleshooting	16	10.67
Vendor Selection	10	6.67

Table 3

Word Count and Corresponding Weighted Percentage

Word	Count	Weighted %age	Similar Words
Training	48	4.83	train, trained, training
Time	38	3.83	time, times
Vendor Selection	20	2.01	access, accessing
Troubleshooting	19	1.91	vendor, vendors
Access to Information	18	1.81	troubleshoot, troubleshooting

Table 2 depicts the references coded per theme identified. References coded indicates the number of data references that were coded to the identified theme and the percent coverage of the data file that the coding presents. Table 3 identifies the word frequency of the survey data. The word frequency reflects the major themes identified in the analysis by displaying the number of times the theme and similar words (i.e., train, trained, and training) appear alongside the weighted percentage of those words.

Interpretation of the Themes

RQ1: What do healthcare administrators perceive as barriers to the effective use of technology in the emergency department? Themes that emerged from this question were: training, access to information, time and troubleshooting.

Theme 1: Training. Each participant (30 of 30) mentioned training as playing a vital role in the ability to deliver value-based care in the emergency department. The following participants' responses to questions (Q) on the questionnaire assisted in answering RQ1. Participant responses to Q1, 1a, 1b, Q5 and Q6 on the research questionnaire, mentioned training as a factor in building and maintaining a value-based culture in the emergency department. Participant P4 and P10 mentioned "training environments as necessary to learn and make mistakes" and "training modules used to make staff feel comfortable."
Participant responses to Q3 and Q5 described training as integral aspect of HIT implementation and value-based care culture. P2 stated,

> The vendor provided us with print materials. The training department was able to develop training profiles based on the user's role in the emergency department. That way the training is individualized and built around roles and use. That should make training easier.

Asserting that "training is essential," P26 said:

> It became increasingly harder to train the team when training began because we were recognizing the system did not function the way the team hoped and needed. For everything they needed to be trained on, we had to go back and change codes and processes.

Additionally, P8 added "Various factors were considered when choosing a vendor. The services offered by the vendor to include staffing and support, training programs, commitment to troubleshooting and upgrade were factors considered." P16 stated "In addition to the training provided during implementation and support afterwards, the vendor offered a 'dress rehearsal' of the new system with mock patients." Multiple participants responded to Q6 indicating that having additional staff come in to cover the floor while permanent staff was being trained ensured every day functions were able to continue, while those would be using the system, had the ability to learn it, like P15 who said, "Temp staff was hired to fill in during dedicated staff training time."

Two participants mentioned identifying staff needs assisted with developing training, most notably P29 who mentioned "When considering training users in the new system, we have to considered individual skills with computers because before this, everything was done on pencil and paper." In some aspect or another, each participant mentioned training as a necessary measure to build and maintain value-based care in the emergency department.

Theme 2: Time. As demonstrated by the participants responses (28 of 30), time management is imperative to HIT system implementation. A total of 28 responses to Q1, Q1a, Q2, Q3 and Q4 referenced time as vital to training and troubleshooting during and after system implementation. Time is also a relevant factor when discussing access to information. When staff

members have enough time to learn the system (training and troubleshooting), they are better able to access the patient information for triaging, diagnosing/treating and admittance/discharge. This was expressed by P21, who said:

> The most challenging aspect of this process was time. This project is a commitment. The perception is that usually technology will provide a sudden rush of efficiency… but we don't factor in how much time it takes to get accustomed to new things.

The emergency department is a unique environment which sees hundreds of people in a day and access to the HIT system is vital to performing everyday functions. One participant in particular (P7) mentioned "There are increasing demands on our time, especially in the administration arena (service requests, authorizations for medication or procedures, etc.) and that impeded on the amount of time we have to spend with the patients." Participants depend on multiple doctors to assist in their care and having a system that will communicate with itself in different areas assists in maximizing the time a doctor spends with the patient by having the information readily available, as mentioned by P9 "Adherence to roles designed for specific users will help to ensure they are able to easily access the information needed to perform their job functions." It was made transparent in the collected data, for this technology to function properly, information needs to be easily accessed, so that the physicians can be able to understand who and what they are dealing with.

Theme 3: Access to Information. Majority of the participants (20 of 30) mentioned access to information as an important aspect in building and maintaining a culture of value-based care in the emergency department. Several participant responses to Q1 and Q1a indicated that being able to access the patient's information is paramount to being able to treat the patient. P2 stated "Accessing the patient data comes on the heels of training. The better the users know how to use

the system the easier and faster they will be able to access to the patient data" and P14 said "We wanted to ensure ease of access to necessary patient data. It does no good for any one if the user cannot access the data needed to help a patient in a time of crisis."

Participants' responses to Q1, Q4, and Q6 focused on access to information being a necessary focal point. P10 stated "The systems are built to communicate with one another for medications, lab work, procedures, etc." According to participant responses, when applied correctly, HIT brought about positive results, improving the quality of services in the emergency departments and the rate of treatment of the patients as mentioned by P1 "Ease of access to the patient's information is paramount to getting the patient triaged and diagnosed. Getting the patient into a bed, test/lab ordered, reviewed and diagnosed help to keep the ER moving quickly" or could be a hinderance as stated by P7 who stated, "The new system had a ton of new features, but those features were always difficult to find when I needed them most."

Theme 4: Troubleshooting. Participant responses to Q1, Q1b, and Q7 provided insight to the necessity of troubleshooting abilities when maintaining a culture of value-based care in the emergency department. P13 said "In the ED, patients do not have 24-48 hours for the system to become functional. We have to have troubleshooting support in a reasonable amount of time." Multiple participants mentioned needing tips, trick or workarounds to keep the patients moving when they system needs to be upgraded or debugged. P10 mentioned "We developed super users to assist with frequently asked questions, like password resets, system lockouts, desktop icons, etc. That helped to free the IT department to provide troubleshooting support for more serious system problems."

Participants identified troubleshooting assistance as an important element when selecting a vendor, as echoed by P8 "Various factors were considered when choosing a vendor. The

services offered by the vendor to include staffing and support, training programs, commitment to troubleshooting and upgrade were factors considered." Other participants mentioned requesting in the moment support, like P8 who said:

> The vendor agreed to help provide over-the-shoulder support as the staff gets familiar with the new system. The more the staff uses the uses, the more requests will be for customization or modifications to frequently used programs and documentation templates.

One participant anticipated troubleshooting problems like broadband width. P3 said "There were some technical challenges we anticipated and wanted to address before implementation. We acquired additional broadband width to accommodate multiple users being in the same system at the same time." This was effective in ensuring everyone could use the system as necessary. The responses of the participants suggested the quicker the staff can troubleshoot the system, the quicker they can get back to treating their patients.

Theme 5: Vendor Selection. Vendor involvement was a minor, but very critical, theme identified in the data. Vendor selection was mentioned throughout the data as it correlated to training, troubleshooting, and time. The participants' responses to Q1, Q1a and Q7 mentioned selecting the right vendor played a role in developing, launching and supporting the implementation process. Multiple participants mentioned vendor selection in the training process was critical to the successful implementation of HIT and subsequently better promotion of value-based care. One participant mentioned conducting a thorough search of HIT vendors and compared what they were offering to what the healthcare facility needed. Specifically, P18 said:

> During the search for a vendor, we looked for someone who has done something similar with other facilities. We looked at their success rate, cost and much more. We did that because the vendor will help us with training before, during and after implementation.

Based on the responses, vendor selection plays a nontrivial role in the implementation guidance, training, system maintenance and future upgrades, which all play a role in sustaining a culture of value-based care in the emergency room.

RQ2: How can technology, such as electronic medical records, help providers establish and maintain value-based care in the emergency department?

Theme 1: Access to Information. I analyzed the theme of access to information as it relates to RQ2 and the participant response to Q1, Q1b, Q2, Q4, and Q6. Most participants (20 of 30) mentioned access to information as a necessary aspect of health information technology; one that helps providers establish and maintain value-based care in the emergency department. P12 said “Having access to the patient information helps us to gather, analyze and diagnose the patient” and P8 wrote “The HIT system has the potential to assist the physicians with routine inquiries and basic data mining, which could in turn help us establish better relationships and provide value-based care to our emergency department patients.” Working in a complex environment like the emergency department, requires the ability to constantly communicate with patients and other physicians. As such, health information technology available to help ease the burden of communication and information storage. But for the healthcare facility to reach the full potential of the HIT, staff must be able to access the needed information in a reasonable amount of time. P18 mentioned “When everyone is slammed in the ER and we are all using the same software program, sometimes is seems like it (the HIT) times out and I can’t access the patient data when I need it.”

A couple of participants mentioned consistency of data display and features as one way to ensure can be accessed in a timely manner. P5 mentioned:

> Something as simple as the patient data display could help or hinder the ease of access to the patient data. Even if all the technology falls into one system, the vitals machine may display the data different from the chart data. That same chart may display different information based on who is looking at the data.

To alleviate that concern, P3 stated

> We worked closely with the developers to ensure the system would look basically the same for each department. Through tabs and subtabs, the only thing that would change would be the color of the screen borders, the colors are specific to each department.

The participants' responses indicate that display of data can assist with the ease of access as it relates to HIT assisting the providers establish and maintain value-based care in the emergency department.

Theme 2: Time. 28 participants (of 30) responded to RQ2 by mentioning time as a factor in being able to achieve a culture of value-based care in the emergency department. P16 said "Having systems like clinical decision support systems could help save time by suggesting diagnoses and treatments based on data previously entered." According to the responses submitted in the emergency department, P24 stated

> A patient's health history could be instrumental in assisting a physician to assess the most appropriate care needed after referencing the patient's medical trend. An updated health record with a patient's documented health history makes it easier to provide physician assistance in a shorter amount of time.

The amount of time spent with a patient can vary based on the patient, but also hinges on the ability of the healthcare provider to be able to utilize the system to its fullest capabilities. Time is of the essence, per the participants' responses.

RQ3: How can ED clinical leaders utilize the Input/Throughput/Output Model as it relates to information technology to better understand the lack of value-based care in the emergency department based in ED crowding?

Theme 1: Access to Information. HIT systems can be used to analyze the input/throughput/output of patient flow when they can access the correct information. Three participants mentioned managing the patient flow from entry to exit as a beneficial feature of the HIT system. P20 wrote:

> The less time it takes the staff to triage the patient and enter the patient data (input), the quicker the patient can be in a bed and seen by a doctor (throughput). The quicker the patient is in the bed, the quicker they can be diagnosed, treated then admitted or discharged (output). Having the right access to the right information aides in that ability.

Emergency department crowding begins at an informational level, as discussed by P15 who said,

> Overcrowding signifies the existence of multiple conjoined problems that affect the efficiency of various aspects of the emergency department and the best way for us to keep moving patients through the ER is to be able to easily access the patient's information.

The leaders of the healthcare facility could use the information about service levels and wait times to identify where the patients spend most of their time, to better equip the emergency room with the technology that would best move the patients through.

RQ4: How can technology systems integrated into health care practices benefit patients and practitioners?

Theme 1: Access to Information. Thirty (30) of 30 participants mentioned access to information as a critical factor in developing a culture of value-based care in the emergency department. The complexity and functionality of the system play a role in how quick the staff can diagnose and treat the patient. P12 mentioned “The complexity of the system required more of our time with patients. It was time consuming to navigate through the different pages/fields to enter or read information.” But this complexity can be mitigated by designing the system in a way that users can access only what is pertinent to their role as stated by P13 “Being clear about what information needs to be collected, how it will be reviewed and by who will, greatly assist in easing the access to the patient's information.”

Corresponding to the theme time, P4 mentioned “Sometimes data doesn't transmit when a user enters the information. This delays getting the most up-to-date information on the patient, thus adding more time between patient moves.” Having access to real time information enables the staff to provide the best possible care in support of a value-based care culture.

Theme 2: Time. 28 of 30 participants mentioned time as a critical factor in developing a culture of value-based care in the emergency department. Time is critical when a patient comes to the emergency room, the less time it takes a physician to review the patient data and key in new data, the quicker the patient cane been treated and admitted or discharged. This sentiment was echoed by P13, who said:

> Data entry, surprisingly enough, can be time consuming, learning how to shorthand the text in the system might help save time, but that doesn't matter if it takes the system 1 or 2 minutes to save and load the next section.

Relationship of Findings

The specific problem to be addressed is the ineffective use of healthcare information technology by hospital administrators and emergency room staff in Georgia's emergency departments, resulting in a lack of focus on value-based care. The central research question used to help answer this was: What do healthcare administrators perceive as barriers to the effective use of technology in the emergency department? To answer this question, I purposively selected executive staff and emergency department staff from healthcare facilities in Georgia. It was serendipitous timing that one healthcare facility had recently undergone a change in management and HIT system overhaul and were able to provide insight relative to today technology implementation process and how it could be used to promote value-based care in their emergency department. The research findings were gathered from multiple participants, ranging from the hospital administrators (i.e., Chief Information Officer, Chief Financial Officer, Director of Quality and Protocol) who decided on when, how and what technology to implement, to the emergency room staff (i.e., Lead Nurse, Unit Secretary, and medical assistants) and others who were directly affected by the implemented technology.

I used the concept of value-based care (Zipfel et al., 2019) and the model of input/throughput/output (Asplin et al., 2003) as the conceptual lens through which I would interpret the findings of this study. The concept of value-based care in the emergency department supports the findings of this study because it highlights the importance of establishing a HIT system, and proving the team with training, troubleshooting assistance, enough time and access to necessary information.

Theme 1: Training. One key theme that repeated itself in the data was training. The findings suggest that the biggest barrier to fully recognizing the potential of the implemented

HIT system was training, or lack of. Previous research has shown that training on HIT can influence providers' willingness and ability to utilize the implemented technology (Bredfeldt et al., 2013). P12 discussed training at their facility as such "Training consisted of a three-step program- 1. I show you how to do it, 2. We do it together, 3. You show me what you know. That address both the visual and kinetic learners." On the other hand, when teams were given new systems and equipment to use, lack of training and support proved to be a real hinderance when implementing and using. This was mentioned by P19, who expressed "Training was difficult to conduct after the system was implemented. The staff is working with real patients, in real time and just did not know how to use the system. It was a difficult learning curve for some." The participants' responses are in line with the research findings of Bredfeldt et al. (2013) who concluded that most providers value advanced training, and that training plays a significant role in maximizing the abilities of the HIT system in an effort to sustain a culture of value-based care in the emergency department.

Research has shown that when the staff was not provided adequate training, it caused errors in patient treatment. Errors in treatment have resulted in tens of million patients who suffer injury or death every year due to the administration of incorrect medical care (Deryahanoglu & Kocaoğlu, 2019). Research has shown that at the time of HIT implementation, 94% of physicians feel that their ability to use the HIT system could be improved (Rockswold & Finnell, 2010). Training was discussed in multiple responses in correlation to selecting the right vendor. The vendor that builds the new system, or installs the new software was important to the healthcare facility as they would provide initial training, however the bulk of the training will fall on subject matter experts (SMEs), developers and analysts and the end users. The SMEs include staff from various departments trained to provide IT support during the implementation project. Research

has shown that when these super-users are identified early and given a robust and thorough training, they were able to serve as additional resources during and after implementation (Weathers & Esper, 2013). A few participants noted that to ensure all end users would be comfortable with the HIT, classroom time was built into the implementation plan (P4, P9, and P10).

Previous studies have provided similar insight such as Ross et al. (2016), who noted that training and education were integral to facilitating successful implementation and use of new systems but could prove to be problematic when not provided or was lacking. Deokar and Sarnikar (2016) mentioned that successfully implementing the HIT does not automatically guarantee an increase on value-based care, much of the success rides on change management. Change in any environment is not easy, and in such a demanding environment, change can be met with uncertainty and fear about how this will impact their job and their ability to do their job (Nilsen et al., 2019). These fears could be addressed and mitigated by providing adequate training (Mair et al., 2012).

Another participant mentioned the project plan needed to include agendas designed to meet the training needs of the staff such as defining SMEs, developing end user training materials, ordering manuals if it was going to be in print, developing training modules, and having access to that training as each module was built. While P6 mentioned:

> The project team (vendor and our employees) building the systems held multiple demonstrations that allowed us to have some say in what the system should perform like. They used fake patient information and showed us what charting it would look like, along with how to bookmark or flag the data for the next person to assess. This helped increase the openness to the new system and made training and transitioning easier because those

> of us who would use the system in the end had an idea of what it would look like and how it should function.

These findings remain consistent with past literature indicating the obligation to adequately provide training to ensure end users will be comfortable with the system. Mair et al. (2012) cited insufficient training for personnel to learn how to work the new system as a major hinderance to fully recognizing the potential of the HIT in the ED. P22 highlighted the importance of receiving continuous training throughout the process by stating:

> One thing I learned and later regretted was not taking the time to encourage the team to have an open mind about the system, to encourage them to play with the system and ask questions when something did not look right. It became increasingly harder to train the team when training began because we were recognizing the system did not function the way the team hoped and needed. For everything they needed to be trained on, we had to go back and change codes and processes. This severely impacted the ability to roll out in an effective manner and be able to get the most out of the system. Of course, the end goal was to provide value-based care for our emergency department patients, not having the system we needed negatively impacted that goal.

The data revealed that the participants indicated the need for training varied among their staff members, which required preplanning to ensure each team member received adequate training for the job requirements. Emergency departments are inherently complex environments made up of different individuals possessing different needs (Codling, 2018). In a complex adaptive system, interactions between staff members occur naturally and are usually unpredictable; hence, it is difficult to plan for changes beforehand. A change in one agent prompts the other sections of the system to react, change, and adapt to the introduced alterations

(Nugus et al., 2010). Successful organizational changes on such a massive scale in the ED environment requires a delicate balance between the organizational needs and the needs of the individual players. Therefore, exploring the individual needs of the staff could prove very beneficial to the overall acceptance of the HIT.

Theme 2: Time. Consistent with previous research, the best way to move the patients through the emergency department, following the input/throughput/output model, the staff must be well trained in the new system, which relates to the next major theme, time. The less time it takes the staff to triage the patient and enter the patient data (input), the quicker the patient can be in a bed and seen by a doctor (throughput). The quicker the patient is in the bed, the quicker they can be diagnosed, treated then admitted or discharged (output). The findings of this data are consistent with the natural resistance to change, especially in the health information technology realm, but also shows how leaders can better leverage the technology they have or intend to implement in their facility.

Participants mentioned time as an additional critical factor in the implementation and use of HIT. Developing a timeline that details the process of developing, implementing and rollout of the technology, as well as managing and maintaining the timeline to meet the go-live date was critical to the participants. Boonstra and Broekhuis (2010) discussed the importance of strategic planning and management of new technology such as HIT in complex adaptive environments such as the emergency department. P1 had this to say, “As the decision makers in this facility, we worked closely with the system engineers and project developers to determine a timeline for building, implementing, training and rollout to facility.” Even more than just working with the project team to determine a timeline, P14 mentioned:

> We didn't just let them (the vendor) decide when and how long the project would take. We gave them the timeline we wanted, a reasonable timeframe of course, and let them then tell us how fast/slow each component of the project would be. We didn't have all the time in the world to get this done.

Participants mentioned that the timeline should have phases built in for building, testing and regression testing built in. P10 mentioned:

> There is more to implementation than just the time it takes for the end users to learn the system, in addition to the time it takes to implement the new system, there is a considerable amount of time taken to build the system to the specifications we requested and required.

These findings are line with recent literature. It is imperative that leaders at the head of a complex adaptive environment ensure there is adequate time and resources including space, finances and human resources to facilitate the success of the implementation (Khan et al., 2018).

The findings suggested that having a timeline, including a checklist to follow was instrumental to the success of the project. P2 noted “Each aspect of the process has a specific amount of time needed to complete it and move to the next step.” Ajami and Bagheri-Tadi (2013) stated that for healthcare facilities to maximize the benefits of the new HIT system, the users must take the time to study and learn the new system, otherwise, time may become a barrier to promoting value-based care in the emergency department. A couple of users mentioned that they did not roll out the entire project at once, saying “Over time, different aspects of the system were bought and added on. As technology changes, we have to adapt” (P6) and “The HIT system implementation is a multistage process that times time” (P18).

Based on the number of inconsistencies that influence the time needed for health information technology (HIT) implementation, the time required for its adoption in a health care facility varies according to the setting and product. Planning the project timeline was the most difficult aspect to nail down. This was mentioned by P21, who said:

> The most challenging aspect of this process was time. This project is a commitment. The perception is that usually technology will provide a sudden rush of efficiency… but we don't factor in how much time it takes to get accustomed to new things.

There are several steps involved in the adoption of an HIT. Providing a clear picture to draft the best approach and time for adoption is crucial in analyzing necessary HIT steps (Scott et al., 2019). Processes such as HIT adoption, technology approval, and medical value are integral in implementing IT successfully. Furthermore, the diverse trajectories within a healthcare facility exist because of varying implementation plans and timelines.

Time plays a crucial role in the recruitment process of an EHR team. This step can move quickly because the user team can come from group representatives and function as subject matter experts from various work areas affected by the HIT, SMEs from the training and IT departments. It is crucial to create a change management plan and a budget in place. Having both can help facilitate findings such as "We were able to stay green during the project building. We went live to the users on time and on budget" (P5). On the other hand, without a change management plan and budget in place, a healthcare facility may experience some heart ache like P4 "Some days it seemed we sacrificed quality processes and systems, for time and staying on deadline" and "It was crunch time from start to finish, everything was down to the wire" (P3).

Data audit and migration is crucial when a health care facility wishes to adopt an EHR. It is important to audit the data in the paper record to ensure that they are up to date. The toughest

moment of this process is moving all this information to the EHR. According to (Scott et al., 2019), software testing is the hardest stage of EHR adoption, thus no fixed time estimate should be set. The healthcare facility could choose to rollout all at once or could choose rollout piece by piece, like P8 who responded "Cost limited the adoption of a full HIT at once. Implementation took longer to roll out, costing more in the long run." The process can take several months with added costs. The factor of time does not end with planning for building and implementing, time is also reliant on the training method used in the implementation of the HIT. Time plays a role from planning, through building, implementing and training support after the system goes live.

Theme 3: Access to Information. Ease of access to patient information was identified as a major theme in this data collection. Past literature has discussed the many benefits of realizing the full potential of any HIT system. In the ED, a patient's health history could be instrumental in assisting a physician to assess the most appropriate care needed after referencing the patient's medical trend. An updated health record with a patient's documented health history makes it easier to provide physician assistance. Castillo (2019) noted that having a patient's records entails having a written story that one can read even in the absence of the author. In case of an emergency where the patient is unconscious or unresponsive, an electronic medical record is the only reference that should guide nurses in administering care.

The use of HIT became popular in hospitals with the passing of the Health Information Technology for Economic and Clinical Health (HITECH) act into law (Witten, 2018), allowing hospitals and health workers to effectively use the technology in their workplaces. P2 stated "Accessing the patient data comes on the heels of training. The better the users know how to use the system the easier and faster they will be able to access to the patient data." In a healthcare facility, doctors and nurses are frequently moving about between rooms, operating theatres,

clinics for outpatients and conference rooms, and therefore receive and give out valuable and time sensitive information, which can be inconvenient and inaccessible at times (Al-khafajiy et al., 2019).

Working in a complex environment like the emergency department, requires the ability to constantly communicate with their patients and other physicians. As such, health information technology is being introduced in several hospitals, to help ease the burden of communication and information storage. But for the healthcare facility to reach the full potential of the HIT, staff must be able to access the needed information in a reasonable amount of time. P18 mentioned "When everyone is slammed in the ER and we are all using the same software program, sometimes is seems like it (the HIT) times out and I can't access the patient data when I need it." Whether the facility is implementing wearable technology such as radio frequency ID tags, barcode reading systems or EHRs, accessing the patient information is paramount, as echoed by McGinn et al. (2011) who reported that when implemented systems did not meet the basic abilities of simplest user, adoption did not go over well.

Health information technology involves the use of computers, both hardware and software, for information processing, storage, retrieval and communication (Brooks, 2019). This medicine practice through computer application aims at reducing medical errors, improving patients' treatment and availing urgently needed medical records, but it doesn't help when data doesn't transmit as mentioned by P4 "Sometimes data doesn't transmit when a user enters the information. This delays getting the most up-to-date information on the patient." P14 mentioned "We wanted to ensure ease of access to necessary patient data. It does no good for any one if the user cannot access the data needed to help a patient in a time of crisis." The HIT system should be helpful in scheduling appointments and billing of medical provisions but when application

look different from screen to screen and user to user, the healthcare facility may run into friction. This was brought up by P5 who said:

> Something as simple as the patient data display could help or hinder the ease of access to the patient data. Even if all the technology falls into one system, the vitals machine may display the data different from the chart data. That same chart may display different information based on who is looking at the data.

When applied correctly, HIT brought about positive results, improving the quality of services in the hospitals and the rate of treatment of the patients as mentioned by P1 “Ease of access to the patient’s information is paramount to getting the patient triaged and diagnosed. Getting the patient into a bed, test/lab ordered, reviewed and diagnosed help to keep the ER moving quickly” or could be a hinderance as stated by P7 who stated, “The new system had a ton of new features, but those features were always difficult to find when I needed them most.” Some of the features mentioned in this category include notifications, patients' and nurses' reminders, clinical guidelines, and diagnostic support. Research by Alotaibi and Federico (2017) reported that doctors can use on-screen reminders to improve process adherence in medicine prescription, clinical outcomes, and vaccination. That same study indicated that the display of the patient information has been criticized and that display can be linked to errors that compromise patient safety.

Systems such as bar code medication administration is one such health information technology that ensures patients are given the correct medication at the right time, by integrating bar code technology on the medical administration records (Alotaibi & Federico, 2017). The system sends out an alert when a medication is confused with its look-alike, as a pre-caution mechanism (Alotaibi & Federico, 2017). However, this technology can only work properly if the

right information about the patient is given. Information access on a patient allows a physician to know the right diagnosis and medication to give to the patient, thereby assisting in administration of the prescribed medication using bar code medication. Moreover, in an emergency department, having access to a patients' medical history will determine which medication is safe to be delivered through the bar code administration, preventing any side effects or fatal outcomes, as corroborated by P10s response "The systems are built to communicate with one another for medications, lab work, procedures, etc. When one area malfunctions, we have to bring it back online ASAP, troubleshooting needs to be quick." P6 said:

> In any other industry, having the system go down is non-negotiable. You don't get travel with a company that can only get you to your destination safely 2/3rd of the time. I need to be able to access my patient's data all the time. And when the system goes down, as it inevitably will, I need to be able to troubleshoot it and get it back up in a timely manner.

The emergency department is a unique environment which sees hundreds of people in a day and access to the HIT system is vital to performing everyday functions. The medical information is filled out in a computer or mobile device and stored, and this information can be easily transferred to different healthcare facilities (Holmgren et al., 2017); making it readily available to the staff who may need to perform an emergency surgery, run labs or discharge a patient and require the patients' medical history and diagnosis. It is however important to note that for this information to be easily transferred and used, it needs to be easily accessible (Walston et al., 2014). Proper filling out of the patients' information makes it easy to access the medical history and condition, which makes it easy to use the EMR in retrieving and storage of data in hospitals.

Health information technology has helped reduce the burden on both the health workers and the patients in general. Medical administration, diagnosis and even tracking of patients has been made easier with the use of this technology, improving healthcare provision and even decreasing cost of medical services. Specifically, when the user has access to the right roles at the right time, as mentioned by P9 “Adherence to roles designed for specific users will help to ensure they are able to easily access the information needed to perform their job functions.” It was made transparent in the collected data, for this technology to function properly, information needs to be easily accessed, so that the physicians can be able to understand who and what they are dealing with.

Theme 4: Troubleshooting. Troubleshooting refers to a problem-solving approach mostly used to address failed programs, processes, or systems (Kim, Coiera et al., 2017). And as such, troubleshooting was identified as a major theme in this data. Troubleshooting is also used to improve the performance of a given structure, such as healthcare. The approach can facilitate the adoption of health improvement technology because it focuses on problem identification and identifies possible solutions. The leadership team chose a vendor that offered a comprehensive package that included troubleshooting, debugging and system upgrade during and after implementation and roll out, respectively. Multiple survey participants mentioned having the support of the vendor developers was instrumental in a successful rollout to expedite everything from adding/removing role security, debugging and troubleshooting problems that arose. P2 stated:

> Our project package included retaining the system developers to assist with bugs we knew would occur after the system was rolled out. After the bulk of the team left, some

> of them stayed permanently to assist in troubleshooting, debugging and upgrading the software.

This statement corresponds with findings presented by Fisk et al. (2015), who reported the healthcare facilities experience maximum results when assisted by adequate technical support and training. Troubleshooting refers to a problem-solving approach mostly used to address failed programs, processes, or systems. Troubleshooting is also used to improve the performance of a given structure, such as healthcare. The approach can facilitate the adoption of health improvement technology because it focuses on problem identification and identifies possible solutions. One participant had this to say about identifying and logging system errors “Being able to utilize the vendor when the system malfunctions is paramount to recovering and being able to move the patient along” (P1).

When HIT systems are implemented, the healthcare system can reduce medical errors and improve patients' treatment experience. Health improvement can also improve physicians' compliance to medical guidelines and enhance healthcare quality and safety. But some participants expressed concern with having to go through too many steps to request troubleshooting assistance.

> There were too many steps when I needed a problem solved. As an end user I had to report the concern in an email, which was then emailed to someone else, then answered via team chat. Depending on the outcome, either I was emailed back a message, or the problem was logged without any follow up (P4).

Another participant had this to say on requesting troubleshooting assistance “All the problems, tips, tricks and workarounds were logged and categorized by our project management office. They worked directly with then vendor to determine troubleshooting steps for the end users to

use" (P5). These patient responses were supported by recent literature. Gabriel et al. (2014) reported 48% of hospitals that received technical support (troubleshooting assistance) experienced less workflow and staffing challenges, whereas 62% of the hospitals that did not receive assistance reported significant challenges with the HIT system, staff and patient satisfaction.

When the system does not work as planned, troubleshooting could lead to the development of additional health information technologies to help physicians to make informed treatment decisions. P15 mentioned:

> It sounds crazy, but I looked forward to the troubleshooting requests we were going to get. Those suggestions and concerns could potentially lead us in the direction of better software, better processes or better programs. I wanted to be able to address the immediate concerns, but also look for better ways for the future.

P7 stated "Patient data and security will always be a concern. We worked with the vendor to ensure they would be able to assist and train use on troubleshooting problems when they arise." The results of this data showed that the healthcare facility made sure to have troubleshooting as a part of the vendor package. They mentioned having 'commitment to troubleshooting' as a requirement of the vendor selection. P8 said "Various factors were considered when choosing a vendor. The services offered by the vendor to include staffing and support, training programs, commitment to troubleshooting and upgrade were factors considered."

Clinical decision support technologies include different tools that improve clinical decision-making and workflow. This participant mentioned some errors they were concerned with:

> One thing we're concerned about is adjacency errors. In this case the user selects an item next to their intended option. When this inevitable occurs, we need a way to troubleshoot the system and undo the errors. We discussed such capabilities with our vendors. (P6)

Health improvement technologies provide clinical decision support by providing data and patient-specific information at the appropriate time to guide treatment decisions (Alotaibi & Federico, 2017).

P3 discussed needing additional broadband width by saying "There were some technical challenges we anticipated and wanted to address before implementation. We acquired additional broadband width to accommodate multiple users being in the same system at the same time." That sentiment is supported by recent literature in which Porter et al. (2018) found that most hospitals fail to invest in technology infrastructures, such as too few computers/tablets, and limited internet bandwidth which results in connectivity issues and slowness (Yen et al., 2017). Another significant cost associated with HIT implementation is technical support. If a system went down in the evenings or on the weekends or holidays, staff could expect to wait 24-48 hours before receiving assistance (Geerligs et al., 2018). In the ED, patients do not have 24-48 hours for the system to become functional. There is no doubt HIT can help improve the delivery of patient care, but it can only be done so when receiving technical support to address the often-unforeseen errors that will eventually occur.

Theme 5: Vendor Selection. Vendor involvement was a minor, but very critical, theme identified in the data. Vendor selection was mentioned throughout the data as it correlated to training, troubleshooting, and time. The participants mentioned selecting the right vendor played a role in developing, launching and supporting the implementation process. Multiple participants mentioned vendor selection in the training process was critical to the successful implementation

of HIT and subsequently better promotion of value-based care. These concerns are supported by recent literature by Singh et al. (2016), who reported that the multifaceted and complex nature of HIT implementation take collaboration and mutual respect for all the parties involved, including the healthcare facility, the stakeholders, the end users and the vendor. One participant mentioned conducting a thorough search of HIT vendors and compared what they were offering to what the healthcare facility needed (P18). Ford et al. (2016) mentioned that facilities have more success with implementation and reaching meaningful use when the vendor selection aligns with the facility's decision-making structures.

P17 mentioned:

> The project team (vendor and our employees) building the systems held multiple demonstrations that allowed us to have some say in what the system should perform like. They used fake patient information and showed us what charting it would look like, along with how to bookmark or flag the data for the next person to assess. This helped increase the openness to the new system and made training and transitioning easier because those of us who would use the system in the end had an idea of what it would look like and how it should function.

This participant discussed heavy reliance on the vendor to assist with training. Another participant noted note having training as a part of the package provided by the vendor they selected and how it impacted training the team when it came to implementation time. The support a vendor offers throughout the life of the project and in the immediate timeframe after implementation makes a huge difference according to one participant. This sentiment is echoed by recent literature such as Holmgren et al. (2017) who drew correlations between perceived

success and failures of HIT adoption. Research has shown vendor selection plays a nontrivial role in the implementation guidance, training, system maintenance and future upgrades.

P8 stated that "Various factors were considered when choosing a vendor. The services offered by the vendor needed to include staffing and support, training programs, commitment to troubleshooting and upgrade were factors considered." Sheikh et al. (2013) reported similar as carefully weighing those factors can ultimately lead to the success of the HIT adoption, leading to the promotion of value-based care. As the complexity of the healthcare facility navigates to becoming more patient-centered, the need to maintain contact with the vendor, for training, debugging and troubleshooting, should be considered (Ballaro & Washington, 2016). Based on the findings presented, vendor selection plays a significant role in the implementation, and subsequent meaningful, by providing continued support. Realizing and utilizing the full capacity of the HIT will assist in the emergency room being better able to provide value-based care for their patients.

Anticipated Themes

I anticipated communication and system interoperability would be themes in this data. While there was mention of both communication and sharing data (system interoperability) within a few answers, there was not much discussion on how those features are vital to achieving value-based care in the emergency department. When the staff triages the patient, inputs the patient data and hands the patient off to the physician or doctor, the system interoperability should allow the patient data to be available wherever the doctor pulls it up. If the patient is admitted and sent to a unit outside of the emergency department, the system should communicate with the other departments within the healthcare facility. When the system is equipped for interoperability, communication between units, staff and patients is enhanced.

Past research has suggested that IT integration can facilitate proper communication and enhance patient flow coordination and management. When the system is built ideally, IT tools can also link the ED department with the rest of the healthcare facility and community (system interoperability), where effective communication will ensure access to information that can improve access to useful clinical information for emergency care (Selck & Decker, 2016). Computerized physician-patient communication can improve care coordination. Healthcare service providers leverage information technologies in various ways to improve communication between nursing and non-nursing staff within the ED. EDs equipped with high-speed internet services, cameras, and monitors allow speedy consultations between healthcare professionals with patients located in remote areas (Stephen et al., 2019). Health experts can collaborate with other providers by sharing images to boost the quality of disseminated care. Besides, telehealth improves data collection and sharing between professionals, which improves tracking and monitoring progress for better treatment outcomes. Telemedicine enables increased use of medical knowledge to improve the quality-of-care patients in remote areas receive. Clinical decision support (CDSSs) allows physicians to select the best and most economical therapies that can enhance patient safety. These tools also provide alerts and warnings if the chosen treatment protocols are risky or whose results are unknown.

Summary of the Findings

In the presentation of the findings, I provided a comprehensive overview of how the collected data were analyzed and aligned to the research questions. Using purposive sampling, I was able to obtain responses from 30 participants who were healthcare administrators or emergency department staff. The participants of this study were able to provide knowledge from opposite ends of the spectrum, some participants were executive leaders who made decisions on

what systems to implement, while the other participants were the end users of that system. The themes that emerged from this data are linked to and consistent with recent and past literature (5+ years). I used the emergent themes to answer research questions and detailed their alignment and relationship to the theoretical and conceptual frameworks of this study. In this section, I established 5 themes: (1) Training, (2), Access to Information, (3) Time, (4) Troubleshooting, and (5) Vendor Selection. I did not find any discrepancies in the literature or in the findings during this study.

Using the identified themes, I answered the central research question of: What do healthcare administrators perceive as barriers to the effective use of technology in the emergency department? Each participant expressed the need for training (early and continuous), access to information, and troubleshooting assistance. The participants indicated that time plays a factor in the effective use of technology and that the vendor selected also plays a non-trivial role in promoting value-based care in the emergency department.

Thanks to the HITECH Act of 2009, the implementation of HIT systems is no longer an option, but is now a government mandate. But implementation is not the same from facility to facility, what worked for this facility, is not guaranteed to work for the next one. The findings from my study confirm that HIT implementation is a complex process, one that involves multiple factors across multiple areas, but that there are steps that leaders can take when planning, implementing and rolling out the new system. The responses indicate that when research is done to select the most appropriate vendor for the project, the leaders can ensure there will be enough time to complete the project, while being able to focus on team member training, troubleshooting support and appropriate access to information.

While there were no outliers in the participant response, surprisingly, the data did not contain any real data pertaining to communication or system interoperability in the responses. The results of this study revealed that dissatisfaction of HIT stems from lack of time dedicated to properly training staff on the complete functionality of systems; this causes delays in data input and sharing, resulting in ineffective communication between healthcare teams. Physician satisfaction translates to patient satisfaction, which contribute to the establishment and maintenance of a culture of value-based care in the emergency department.

Application to Professional Practice

The purpose of the qualitative study was to identify how healthcare leaders could better leverage technology in the emergency department to promote value-based care for their patients. The findings of this study revealed there are several key factors associated with developing a culture of value-based care in the emergency department. Healthcare delivery is an ever-evolving field that continuously provides opportunities for change and development. Technology is essential to the everyday functions of the emergency room and the effective use of HIT systems can help create and sustain a culture of value-based care. The results of my study clarify the aspects of HIT implementation and use that are most important for healthcare staff in Georgia emergency departments to maximize the benefits of the HIT systems. Maximizing the benefits of the HIT system offers healthcare providers additional avenues of proper diagnoses and treatments. Proper diagnosis and treatment plans increase the patient's confidence in their healthcare team (Balogh et al., 2015a). When the patients have more confidence in their healthcare team, the patient is more engaged in their treatment and recovery plans, minimizing the changes of immediate returns to the emergency department, therefore offering the best value-based care (Balogh et al., 2015a; Vahdat et al., 2014).

Improving General Business Practice

The participants in this study made it clear that developing and sustaining a culture of value-based care for their emergency department patients is attainable but there are steps leaders need to take to accomplish this process. The findings of this study indicated several key aspects leaders could use to better equip their staff when treating their patients. In this study the literature review focused on maximining the benefits of technology as it assists in the capture and analysis of data used in patient-centered healthcare. If administrators are not adequately informed on the benefits of effective HIT, and emergency department staff is not accustomed to the complex nature of HIT, high user errors can negatively impact the quality of care provided to patients. The lack of skills and proper knowledge concerning HIT fails the sole purpose of this technological system, thus eventually resulting in poor care delivery. The results of this study could potentially provide insights into better post implementation strategies for healthcare leaders. Better implementation could result in better use of HIT in the emergency department.

The research literature in this study highlighted some of the benefits of technology, as well as some of the major barriers to technology acceptance. The findings of this study indicated training to be a major barrier to the acceptance of technology in a complex environment such as the emergency department. The findings are supported by literature that indicated training received after HIT implementation is inadequate at best and non-existent at worst (Ko et al., 2018; Meehan, 2017). These findings are also supported by literature showing that staff members expressed a fear of technology and poor computer literacy as factors that limited their abilities to serve their patients (Ko et al., 2018). Recommendations for improving general practices include providing clear and constant communication with the staff regarding impending changes and providing the team with adequate training and time. HIT systems have the potential to sustain a

culture of value-based care in the emergency department, but that culture can be hampered when the staff is not familiar with the new systems.

Healthcare leaders could also capitalize on the technology by using it to analyze patient flow through the emergency department to identify, after they are called back and triaged, where the patient spends the most time waiting to interact with the staff. According to a 2003-2004 study by the Centers for Disease Control (CDC), over 10% of critical patients had to wait more than an hour in the waiting area, before being triaged and admitted, to see the doctor (Salway et al., 2017). Overcrowding within the ED reduces the quality of disseminated care and may increase death rates by slowing down the speed at which seriously ill patients get the medical attention they require. Healthcare leaders can work with their HIT system vendor to discuss implementing tracking technology, such as radio frequency identification (RFID) tags for patients, or tracking software, such as General Order Message programs as a part of their existing HIT (California Healthcare Foundation, 2011).

Tracking technology has the added benefit of detailed reporting. These reports allow leaders to see statistics on staff to patient ratios. These (individual) statistical reports can show how many patients are assigned to a staff member, the length of time to treat the patient, how often that patient has visited the ER, the length of time between staff-patient interactions and how long from patient entry to patient discharge/admittance (Ebrahimzadeh et al., 2017). Tracking system are not limited to only the emergency department. When a patient enters the emergency department, there is almost always need for assistance from other departments such as radiology, laboratory, respiratory, and as such, patient tracking can be beneficial to all departments involved. The medical team involved in the patient's treatment can see everything from basic patient demographics to lab work to level of urgency, as well as patient length of stay.

In other settings, healthcare leaders across the state of Georgia and beyond may experience similar setbacks and frustrations after implementing technology into their facilities and could use this study to ease the transition and develop their value-based culture. Additionally, this study could help identify areas of opportunities for facilities with existing HIT systems who may be struggling to capitalize on its benefits. The study showed that vendor alignment is important, and that adequate training and troubleshooting were vital.

Potential Application Strategies

Strategic approach to developing a culture of value-based care in the emergency department starts with recognizing the full benefits of any health information technology systems currently implemented. If those systems are lacking in effectiveness or efficiency, the leader may want to consider upgrading, building on to or overhauling the existing technology. Post implementation processes vary and can include approaches such as top-down (leadership driven), middle-out (making changes to existing systems) or bottom-up (brand new systems built from scratch; Fullan, 2015; Stewart et al., 2015). Wherever the leadership team is going to start, it is beneficial to identify a vendor that aligns with the organizational strategies and decision-making structures of the healthcare facility (Ford et al., 2016). As identified in the presentation of this study's findings, factors that contribute to the success of building a culture of value-based care are training, time, access to information, troubleshooting and vendor selection. The digital structure of the HIT system's (i.e., displays, colors, and permissions), availability of broadband and technical infrastructure and troubleshooting assistance affect the ability of the staff to efficiently use the system. Thus, when considering a vendor to implement or upgrade technology, these are factors the leaders should consider.

A further potential strategy to consider would be that after a vendor has been selected; the leaders should select an organization change management (OCM) team. The OCM should use techniques such as stakeholder analysis, temperature surveys, constant communication, and training throughout the implementation process until the changes are ingrained into the culture of the facility. After the OCM team is identified, leaders should also identify subject matter experts (SME). These staff members will be the ones that remain after the project team is gone. The term SME refers to the team members selected to work with the project team to provide definitions and business requirements for the new system. The SMEs will also be trained specifically for system implementation and rollout, they will also provide training and support to the rest of the staff once the project team has wrapped up (Weathers & Esper, 2013).

When determining the timeline of system implementation or upgrade, the healthcare leaders will need to work with the system vendor to determine how much time will be needed to effectively train the users on the new systems. Training should begin as early as possible to allow for the maximum amount of time for users to become acquainted with the system. Leaders could benefit from having different teams build different areas of the system and appointing one SME to each of those areas. The leaders could also benefit from demonstrations of the system as it is being built. These demos would be shown to stakeholders, leaders and the staff that would be most affected by that system function or feature. Conducting demonstrations on the different areas facilitates feedback and buy in from the end users.

It is recommended that training be offered in multiple strategies to accommodate various training needs. Training should include face-to-face training, computer based modular trainings and mock environment training. System demonstrations would be an example of face-to-face trainings. Computer based modular trainings allows staff remote access to modules which they

can use to learn or refresh their memories on specific areas of the system they are not comfortable with. As the project gets closer to implementation, the facility would greatly benefit from having a mock environment to train in. In the mock environment, the staff can 'play around' in the new system using fake patient data, fostering end user engagement and allows for communication of expectations of system functions.

Addressing these factors beforehand can help ensure a smooth upgrade, extension or implementation of a new system. Addressing any concerns and various training needs also assists in the development and maintenance of a culture of value-based care in the emergency department.

Summary of Application to Professional Practice

This is one of very few existing research studies to explore developing a culture of value-based care in the emergency department. Throughout the literature I discovered there are known benefits of implementing health information technology; however, I found very little discussions on developing a culture of value-based care after technology implementation. This study adds to the knowledge in the discipline of patient centered care by exploring key elements and leadership strategies that contribute to the development and maintenance of a culture of value-based care. A qualitative case study design gave me the ability to examine the phenomenon in detail, and the 30 participants freely contributed their knowledge and experience of implementing HIT and using HIT in their everyday duties. Specifically, in promoting value-based care, the data in this study may give healthcare companies and other health organizations a better understanding of how effectively leveraging HIT can development and maintain of a culture of value-based care.

Every emergency department is different, but the ultimate goal of each is to prove the best possible care to their patients, no matter their induvial needs. To meet the needs, the

emergency department healthcare leaders will need to assess the technology they have currently and decide where to go. If the leader is comfortable with the system they currently have, they may consider exploring additional technologies such as RFID technology or patient tracking programs to identify where patients spend the most time. The best approach is to identify a vendor that aligns with the organizational goals, in addition to offering a comprehensive package that includes training and troubleshooting support during and after implementation. The goal of the emergency department should be to move the patient up (admittance) or out (discharge). Taking full advantage of the technology available can help the providers meet that goal. Value-based care in the emergency department is attainable and the goal of this study was to help healthcare leaders understand how they can establish this culture in their ER.

Recommendations for Further Study

The recommendations for future research stem from the sample population, the research approach and study findings. The recommendations for further research include (a) a post-implementation HIT effectiveness analysis and (b) utilizing HIT to better understand patient flow through the ER. A recommendation for future studies would be to research the effectiveness of post implementation HIT in healthcare settings. Existing research literature highlights the benefits of technology, as well as strategies for pre-implementation. There is little research that highlights how to maximize technology after implementation. Recommendations also include focused additional research on the Input/Throughput/Output process for the emergency department. Existing studies speak to crowding in the emergency department, but there is a lack of research that focuses on using the HIT systems in place to analyze where patients spend the most time waiting to be seen. One aspect of value-based care is taking into consideration how much time a patient spends waiting, waiting to be triaged, waiting to be sent for labs, waiting for

results, or their next steps. Armed with that knowledge of wait times, healthcare leaders could begin to effectively tackle moving patients through the ER.

Healthcare organizations, leaders and staff may benefit from the results of this study. Literature has established that a culture of value-based care is beneficial to both the facility and the patient (Zipfel et al., 2019). Health care leaders can reap benefits by recognizing the factors and leadership strategies associated with cultures of value-based care in the emergency department. The provision of effectual value-based health care for the ED population may improve human conditions and have a decisive social impact by potentially resulting in a reduction of patient visits and healthcare costs. As a result, beneficial social change occurs through improved health outcomes, increased quality of life, and amended leadership styles that promote value-based care in the emergency department.

Reflections

When looking back, one reflection I have was underestimating the challenges faced when attempting to gain access to participants that qualify for the study. My first attempt was to work with a research facility whose organizational goal closely aligned with the problem being researched in this study. But the impacts of COVID-19 derailed the original plans, and I had to learn to stay flexible, backtrack and restart the entire data collection process. Being able to stay flexible allowed me to refocus and redesign my study to allow more participants to complete the survey with minimal time constraints.

Having spent a few years working in the healthcare field, and most recently working as a project manager, I was concerned about potentially injecting personal bias into my research. At the beginning of the data analysis, I had concerns of injecting bias into the results due to my experience with HIT in the past, but I was able to minimize that bias by recognizing that my

experience was limited to that of end user. I also had to reflect on my experience as a project manager who made decisions on how technology systems should work. Being cognizant of my bias, I remained cognizant of my experience when I began to analyze the data into the emergent themes. Overall, I believe collecting the data via anonymous online surveys was the best possible course to mitigate any bias I may have injected into the data analysis. In reflecting on the data that was collected, the participant responses were along the lines of what I expected, but one thing that did surprise me was the lack of responses on communication or system interoperability. Having managed projects and seen the outcome of lack of system interoperability, I expected that leaders would discuss that as a necessary tool for system implementation.

Personal and Professional Growth

This doctoral degree has been an eight-year journey. I went back to school in September 2012 and earned my Associates of Applied Science in 2014. I earned my Bachelor of Business Administration in 2016, and my Master of Business Administration in 2017. And now, after working on this degree for two years and the manuscript for 1.5 years, I will earn my Doctor of Business Administration. There is a lot to look back on. I was born to drug addicted parents who never completed anything beyond high school. Neither of them placed an emphasis on schooling, only that I graduate high school. From there, what I did was not in spite of them, but because of them. I made it through every class until the colloquium. I struggled with selecting an appropriate topic and writing the concept paper. I truly almost gave up, but nevertheless, I persisted. Over the course of three years, this manuscript has been filled with long days, endless nights and plenty of coffee. But it was well worth it. Personally, this process opened my eyes to what limitations I set for myself and I realized I can break through those barriers.

Professionally, pursing this degree has helped me immensely in my current job role. The classes that were taken to get me here, and the research that was conducted to produce this manuscript has transferred to my current job role as a project manager. That role requires constant research and communication with internal and external partners, stakeholders, and vendors. Analyzing the data in this study also helped me to recognize how often I interject my own biases when working with vendors, clients, and peers at work. Several aspects of the projects I have led required my individual experiences from past jobs. And as a result of having to recognize any potential bias in my research data and learning how to dismiss it, I will now be able to better recognize and minimize biasness at work. This experience will also help me perform job functions more effectively in future roles. In the future, I intend to operate in a role such as Sr Strategic Business Analyst or practice manager. Having this degree will help secure those roles, but it will also give the necessary knowledge to support my career experiences.

Biblical Perspective

The Bible does not give a specific number of people that Jesus healed. There are documented recordings of Jesus raising three people from the dead, and at least one recording of Jesus healing in each of the Gospels. In Matthew 4:24 Jesus heals a multitude of people in Syria suffering with various diseases and pains, those under the power of demons, epileptics, and paralytics. In Mark 1:31 Jesus heals Simon-Peter's mother, after her fever broke, she began to serve them. In Luke 17:14 Jesus heals the lepers. And in John 4: 50 and 51 Jesus healed the Nobleman's son. But my favorite is John 21:25 "And there are also many other things which Jesus did, the which if they should be written everyone, I suppose that even the world itself would not contain the books that should be written." Jesus did so much more than could ever

have been recorded and while Jesus was not a MD as we know them today, His ministry was all about healing not only the body, but also the spirit as well.

Working in the healthcare field offers providers the opportunity to live and work righteously and honestly. Galatians 5:13 -14 “For you were called to freedom, brothers. Only do not use your freedom as an opportunity for the flesh, but through love serve one another. For the whole law is fulfilled in one word: “You shall love your neighbor as yourself.” Often healthcare, particularly in the emergency department, is a matter of life and death and what better way to honor the Word of God, than by using our gifts and talents to care for one another? God continues with His creation through technology and innovations developed by human beings. God remains the healer in whose absence, the efforts of physicians have no value. As such, God is the ultimate healer and uses the knowledge of the doctors advanced through the science of medication and other medical procedures to render His healing. Healthcare information technology is a model that enhances the quality of healthcare in hospitals. Many religious experts assert that the technological advancements in the medical sector are a significant creation of God in His design to reduce the suffering of His people (Mokyr et al., 2015). Therefore, God advances positive knowledge and guides innovators into designing and developing technology for application in the healthcare sector.

From a strategic planning point of view, Nehemiah provides a great example of leadership. Nehemiah started as King Artaxerxes’ cupbearer and eventually became the governor of Judah. Nehemiah provides a great example of leadership and strategic thinking. Nehemiah knew he would have to travel through foreign lands and had the forethought to request letters of safe passage from the king. In this Nehemiah can teach leaders the value of planning ahead. Those letters also provided a grant for building materials for the city. This type of strategic

planning allowed Nehemiah to obtain the materials needed prior to the start of the project. Nehemiah was also known for his adaptability and for attending to the needs of his people. Nehemiah earned and maintained the confidence of his follows by listening to them and adapting to concerns and security threats. These leadership traits are still relevant and useful of healthcare leaders today. Allowing and encouraging your staff to openly communicate concerns and ideas to the leadership, could greatly assist in developing a culture of value-based care for the emergency department patients.

The Bible also does not talk about value-based care in the emergency department, but it does, however, tell The Parable of the Talents in Matthew 25. In this story, Jesus talks about being a good steward of time and materials that man in entrusted with. Everything we have comes from God. We are responsible for utilizing those resources to enhance the lives of those around us. As a healthcare leader, the Bible holds implications for us from both a leader and a worker perspective. As a leader, we must create a healthy work environment for our employees that they want to work in and thrive in. As an employee, we must give our best effort to our internal customers and external patients. While the technology and medical care we have now did not exist in Biblical times, we are still charged with caring for others the same way Jesus cares for us. According to Aßländer et al. (2016), stewards call for the protection and proper management of God's resources or investments under one's control. Likewise, apportioning value to be used on technological equipment in healthcare means protecting God's creation achieved through science to support human life.

Summary of Reflections

This experience was quite a journey that required a lot of time, patience, and caffeine, but it is one that I would never change. I have learned so much about my intended career field, but

also learned a lot about myself, what I can withstand and the determination I carry within myself. Reflecting back on this process, I have found myself incorporating Biblical aspects into my everyday life. I like to hold tight to Matthew 14:32 "And when they were gone up into the boat, the wind ceased." This scripture comes from a familiar story. This is the story of Jesus calling Peter to walk on water. Peter stepped out and became afraid and began to drown. I am Peter. Jesus called me to this point in my life and on more than one occasion, I became afraid and began to drown under the pressures of everyday life. Then I look back to Matthew 14:32 and I remind myself that Jesus walked alongside Peter during his storm and once they were safe in the boat, then the wind and seas dies down. If Jesus was gracious enough to walk alongside Peter, He will also walk next to me while I am in my storm. This has given me renewed strength and motivation to make it through this process until the end.

Summary of Section 3

Section 3 provided a comprehensive review of the findings of this study. To collect the data, I used a purposive sampling technique to select participant who met specific criteria to give insight into the phenomenon of how the ineffective use of healthcare information technology by hospital administrators in emergency departments across Georgia resulted in a lack of focus on value-based care for their patients. The participants that were selected where healthcare administrators who made decisions regarding what technology would be implemented, as well as emergency department staff that uses the technology in their everyday job roles.

The findings indicated that training, time, troubleshooting, ease of access and vendor selection all play a role in the ability to create a culture of value-based care in the emergency department. Participants concluded that training is a major factor in being able to successfully use the health information technology to capitalize on its benefits. When the staff knows how to

use the system effectively, they will be able to better access the information needed for the patient in a timely manner. Troubleshooting system failures is imperative to keeping the emergency department running smoothly. And time and vendor selection play non-trivial roles as they relate to each of the other themes identified in this study.

There are multiple takeaways from this study that other healthcare facilities can learn from or use as they prepare to embark on HIT system implementations and updates. Allow the staff as much time and as many opportunities as possible to train in the new system so they become familiar with it before rollout time. Select the vendor carefully for packages that meet your organization's needs and develop superusers that will be able to stay and train, debug and update the system after the vendor closes the project and moves on.

Summary and Study Conclusion

Developing a culture of value-based care for emergency department patients relies heavily on the staff members being able to effectively utilize the health information technology available to them. The larger the emergency department, the more complex the implementation process is likely to be. Healthcare leaders understand how health information technology can impact the outcomes of patient visits, but struggle in implementing and maximizing the benefits of that technology. The purpose of this study was to explore ways healthcare leaders can better leverage their technology to increase the focus on value-based care. The participants' responses in this study identified five key themes that can assist healthcare leaders in creating that culture. Those themes were (1) training, (2) time, (3) access to information, (4) troubleshooting, and (5) vendor selection.

The findings of this study placed an emphasis on training and access to information as critical factors to providing their patients with optimal care. Training, as discussed by the

participants, should start early, and be offered in various formats to accommodate the various training needs for each of the staff members. Access to information comes on the heels of training and can be customized based on the roles of the users. Everything from role security to data display can affect the ease of access to information for the staff. Troubleshooting techniques should be address during training and post-implementation. Knowing how to address these concerns helps to bring the system back online and serve patients quicker. Time was mentioned as a critical factor when considering the timeline of project start to system upgrade or rollout. Time is a factor that effects training programs and processes (before implementation) and access to information and patient input/throughput/output (after rollout). All these factors, training, time, access to information and troubleshooting, can all be addressed when considering what vendor will be chosen to implement the system. Addressing each of these themes and their individual impacts on the emergency department, can lend a hand in promoting value-based care in the emergency department.

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Appendix A: Interview Protocol

Overview of the Research

The purpose of this qualitative case study will be to explore the ineffective use of healthcare information technology by hospital administrators in Georgia's emergency departments resulting in a lack of focus on value-based care. The implication of the study includes the potential to provide new insight to hospital leaders who are charged with making decisions as to when and what HIT is implemented in this hospital while contributing to the opportunity to promote value-based care in the hospital emergency department. Promoting value-based care in the emergency department could assist in achieving better patient outcomes, overall population health, foster a healthier workforce, and contribute to the reduction in health care costs.

Data Collection Procedures

- Participants are purposefully selected from the executive suite of one hospital in one Georgia.
- After IRB approval, the researcher will submit a request to a social media group containing doctoral research students, graduates and professionals.
- Consent will be the first page participants see after clicking on the survey link. Participants will sign the consent question as a requirement to complete the survey. Participants will certify they meet the minimum age requirement as a part of the survey data collected.
- Data will be collected via online survey. It will take approximately 30 minutes.

- A reflexive journal will be used to document awareness of personal experiences and views concerning the use of HIT that could present bias and affect the interpretation of the information gathered.
- Electronic data will be kept secure on a password protected computer, accessible only by the researcher.
- The data will be kept for a period of five years as advised by the university Institutional Review Board
- The following are the nine questions in the interview questionnaire for this study:
    - RQ1. What do healthcare administrators perceive as barriers to the effective use of technology in the emergency department?
        - RQ1a. What factors promote the adoption of healthcare information technology?
        - RQ1b. What factors prevent the adoption of healthcare information technology?
    - RQ2. How can technology, such as electronic medical records, help providers establish and maintain value-based care in the emergency department?
    - RQ3. How can ED clinical leaders utilize the Input/Throughput/Output Model to better understand the lack of value-based care in the emergency department based in ED crowding?
    - RQ4. How can technology systems integrated into health care practices benefit patients and practitioners?

- RQ5. As a healthcare leader what strategies did you use in identifying staff training needs and developing staff training programs to promote successful implementation of HIT systems?
- RQ6. What additional information can you provide to assist me in understanding how healthcare leaders can better promote value-based care in the emergency department?
- RQ7. Any other input on the effectiveness of HIT in the emergency department?

Appendix B: Case Study Protocol

1) Case Study Introduction
    a. Researcher introduction and study purpose and overview
    b. Research questions:
        i. RQ1. What do healthcare administrators perceive as barriers to the effective use of technology in the emergency department?
            1. RQ1a. What factors promote the adoption of healthcare information technology?
            2. RQ1b. What factors prevent the adoption of healthcare information technology?
        ii. RQ2. How can technology, such as electronic medical records, help providers establish and maintain value-based care in the emergency department?
        iii. RQ3. How can ED clinical leaders utilize the Input/Throughput/Output Model to better understand the lack of value-based care in the emergency department based in ED crowding?
        iv. RQ4. How can technology systems integrated into health care practices benefit patients and practitioners?
2) Conceptual Framework
    a. Complex Adaptive Theory
    b. Input/Throughput/Output Model of ED Patient Flow
    c. The Value-Based Healthcare Model
3) Protocol Purpose

a. Protocol applied by the researcher to direct and inform all study data collection, analyses, and conclusions.
b. Researcher to employ protocol to confirm dependability of case study methods, results, and conclusions.
c. Protocol is included in case study database and helps establish an audit trail.

4) Data Collection Procedures
    a. Obtain IRB approval for Liberty University to conduct the study, researcher will purposively select participants from online group of doctoral students, graduates and professionals.
    b. Send request to a social media group containing doctoral research students, graduates and professionals.
    c. Review questions on questionnaire to confirm alignment with research questions as recognized in a semi-structured interview format.
    d. Assign alpha numeric identifier to participant questionnaire transcripts.
5) Data Collection Tools
    a. Online survey
    b. Researcher reflexive journal
    c. Researcher memos and notes
    d. Case study database contains:
        i. Healthcare documents pertaining to decision-making processes, policies and procedures, meetings, and financials.
        ii. Interview transcripts
        iii. Researcher notes

iv. Preliminary analyses

6) Outline of Case Study Report Contents
    a. Overview of study
    b. Presentation of the findings
    c. Comparison of existing and similar literature
    d. Limitations of study
    e. Recommendations for future research
    f. Implications for social change
    g. Recommendations for practice
    h. Reflections
    i. Conclusions
7) Data Analysis Techniques and Tools
    a. Coding
    b. Analysis software (NVivo 12)
    c. Microsoft Work charts
    d. Comparison of existing and similar literature
    e. Theoretical data saturation
    f. Research questions alignment with questionnaire questions
8) Study methods for reliability and validity
    a. Dependability methods
    b. Case study protocol use
    c. Case study database and audit trail establishment
9) Credibility, transferability, dependability, and confirmability methods

a. Credibility – Research bias identification, triangulation, reflexivity, standardized questionnaires, saturation, and peer debriefing
b. Transferability – Thick, rich description of study population, purposive sample
c. Dependability – Multiple data sources and audit trail
d. Confirmability – Researcher reflexive journal, audit trail, and data triangulation

10) Ethical procedures

a. IRB approval
b. Informed Consent Form
c. Address ethical concerns regarding research in participants' workspace.
d. Secure data collection and storage
e. Participant confidentiality – alphanumeric coding