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Effect of a Cardiology Nurse Practitioner Service on the Reduction in Length of stay for Low Risk Chest Pain Patients

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This is to certify that the doctoral study by

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Abstract

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by

Marcia Reid

MA, New York University, 2002

BSN, Medgar Evers College, 1998

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Healthcare organizations are responding to changes in reimbursements by redesigning and re-evaluating existing programs to improve patient outcomes. One such intervention at the project setting was the re-evaluation of the treatment of patients with low risk for chest pain and implementing a cardiology nurse practitioner (NP) service focusing on the reduction of length of stay (LOS) with the goal of improving patient outcomes. The purpose of this doctor of nursing practice project was to evaluate the effectiveness of a nurse practitioner-led service on the reduction of LOS of patients with low risk for chest pain. An established evidenced-based guideline developed by the American Heart Association for the treatment of patients with low risk for chest pain was adopted by the NP service. The project was guided by both the Donabedian model of quality care and the Aday and Anderson theory of access to medical care. The project design proposal is a comparative study using retrospective data obtained from the medical records of LOS pre- and post-implementation of the project. Implications for social change include improvement in patient care on a national level, not only for patients with low risk for chest pain, but also for patients with other chronic diseases. Streamlining care will improve the financial standing of hospitals as well as provide care that is equal and equitable regardless of race or financial status. The findings of this project have strengthened the role of the APN globally as a social advocate for change, actively participating in designing and implementing programs to improve patients' outcomes.

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Dedication

To my son, Matthew Zuri McCurvin, thank you for your patience and understanding throughout this journey.

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I will take this opportunity to thank my family and friends for their support during this academic journey. It required sacrifices of time including missing events and times of sharing to meet important deadlines yet you understood and offered understanding and ongoing support. I would like to acknowledge Dr. Mary Verklan for her ongoing support and encouragement throughout this process and for her gentle yet powerful words that gave me the strength to keep working to complete this degree. To Dr. Nancy Moss, Dr Dana Leach, Dr Tracy Wright and the IRB committee, I say thank you also for your support

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Section One: Overview of the Evidence–based Project

Introduction

Due to escalating healthcare cost including changes in reimbursement (Hines & Yu, 2009), high malpractice rates (Chang et al, 2008), and balancing the need to meet American Heart Association (AHA) guidelines for the treatment of chest pain patients (Preeti, Napoli & Preeti, 2011), hospital administrators are faced with finding an appropriate strategy to rule out low risk chest pain patients and facilitate discharge in less than 24 hours after admission. One such strategy is the implementation of observation units in emergency departments, staffed by cardiologists and advanced practice nurses (APNs). This team would facilitate and coordinate the care of patients to identify low risk chest pain patients, provide standardize evidence-based management, and facilitate appropriate discharge within less than 24 hours of these admissions. A study done by Baugh et al (2012) stated that the use of evidence-based evaluation and standardization of protocols in the treatment of patients in observation units has provided the strongest evidence in supporting shorter lengths of stay. Observation units are not restricted to an Emergency Room (ER) but can be in other areas of the hospital or patients can be with other inpatients if an observation unit does not exist (Baugh et al, 2012). The literature identified low risk chest pain patients as those with an electrocardiograph (EKG) with no evidence of ischemia and negative baseline cardiac injury markers (Amsterdam et al., 2010). This paper discusses the potential effectiveness of a cardiology nurse practitioner

(NP) service on reducing length of stay of low risk chest pain patients to less than 24 hours after admission. It also presents the methods that would have been used in exploring the variables if data collection and analysis was done as well as the evidence-based practice model that supported the research and practice outcome. Theoretical frameworks that guided the development of the project were also identified and enabled the findings to be linked to the existing body of knowledge.

Problem Statement

With ten million patients presenting to emergency departments (EDs) annually for emergent evaluation of chest pain and other symptoms related to myocardial infarction (MI) (Kline, Zeitouni, Hernandez-Nino & Jones, 2009), the challenge for providers is rapid initial evaluation of these patients to determine those with MI and to determine if further treatment is warranted for the other intermediate or low risk chest pain patients (Birkhahn et al.,2011).The cost of admitting low risk chest pain patients for more than 24 hours and the challenge of following American Heart Association (AHA) guidelines to rule out ischemia in a timely manner has been an obstacle for many hospitals (Ross, 2004). The early evaluation of these low risk chest pain patients to facilitate discharge within less than 24 hours after admission has the potential to improve quality of care, significantly decrease medical costs and hospital expenses, and would be an appropriate use of resources (McMurray, 2000). This has led to many healthcare organizations, including the author's current practicing facility, to explore and develop various programs and interventions to address the issue.

The implementation of observation units with APNs as team leaders was in response to the need for rapid evaluation of low risk chest pain patients to rule out ischemic heart damage and to facilitate discharge within a timeframe set by the facility. The facility under study responded with an APN focused cardiology team with two nurse practitioners as team leaders and a cardiology attending as a collaborating physician to evaluate and admit these patients, order and follow up confirmatory tests results, and discharge these patients within less than 24 hours. Prior to implementation of the team, low risk chest pain patients were admitted into the general cardiology patient population and were being managed by the medical staff on service for that rotation or shift. This led to a lack of urgency in ordering of tests, delay or cancellation of tests due to inappropriate tests being ordered, or the orders not being transmitted electronically to the correct department, as well as no follow-up call being made to the receiving department to confirm that the tests were noted in the system. There was also a lack of coordination between the transport department, the medical unit, and the department where these tests were being done. This resulted in delay of transfer between departments leading to long wait periods and sometimes cancellation due to patients' complaints or end of day closure of the department.

Purpose Statement

According to Farkough et al. (1998), approximately 5 million people with chest pain are evaluated in emergency rooms at a cost of $6 billion annually. As cited by Farkough et al. (2008), most of these patients are admitted to the hospital with an average

length of stay of 1.9 days and a mean cost of $4,135. Being able to identify, treat, and discharge those with unstable angina among this large group of low risk chest pain patients has created a challenge for health care providers who already have a low threshold for admitting this group related to high malpractice claims related to the management of acute coronary syndrome (ACS) (Quinn,2000).

Due to changes in reimbursements and the financial uncertainty of many healthcare organizations, this traditional approach to evaluating and treating chest pain patients is both expensive and time consuming, requiring these facilities to re-evaluate their approach. The facility under study, in re-evaluating its approach to the treatment of chest pain, implemented a cardiology-led NP team that used EBP guidelines in the treatment of low risk chest pain patients to facilitate discharge within 24 hours of admission. The aim of this healthcare organization was to provide quality, cost-effective care in a timely manner, thereby improving patient outcomes with cost-saving benefits to the facility and patient. The purpose of this project was to provide evidence from the literature that would establish a link between APNs' using EBP guidelines to improve the outcome of patients with low risk chest pain while decreasing cost. One overreaching goal was to add to the body of knowledge by providing data that supported APNs contribution to providing quality, cost-effective care.

Project Objectives

The main objective of this project was to determine the effectiveness of APNs in reducing the length of stay of patients with low risk chest pain to less than 24 hours after

admissions. This was supposed to be done by retrospectively evaluating a NP led cardiology team that was established four months before the study proposed date. Once patients were admitted onto the cardiology NP service, it was the responsibility of the admitting NP to inform echocardiography and stress laboratory personnel of the required tests that had been ordered. This facilitated the coordination of care between departments and allowed for a well-coordinated follow through in the delivery of care. It was also the responsibility of the NP to obtain and evaluate these results in a timely manner to achieve the goal of discharging these patients in less than 24 hours after admission. The primary nurse responsible for the patient was also considered a part of the team as she was responsible for informing the NP of any delay or postponement of these tests.

Significance/ Relevance to Practice

Emergency departments (ED) across the United States evaluate more than 10 million adults with chest pain or complaints of dyspnea annually, making chest pain the second most frequent ED complaint (Kline, 2009). Chest pain on presentation to the ED must be taken seriously since cardiovascular disease is the number one cause of death in the US (Beck & Barrett, 2007). According to Beck and Barret (2007), at least one fourth of all Americans suffer from some form of heart disease, with 710,160 deaths or 29.6% of all deaths related to heart disease in 2002.

Despite these numbers, only 20% of all chest pain participants are considered high-risk requiring admission to inpatient units or immediate intervention. As providers, the challenge is rapid identification of the 20% of chest pain patients who require

immediate intervention and treatment. The remaining 80% are considered low risk chest pain patients requiring providers to follow AHA guidelines in further evaluation and treatment to facilitate discharge within 24 hours of admission.

Chang et al. (2008) addressed the issue of the large number of chest pain patients seen in EDs annually and found that up to 85% of these patients did not have a cardiac cause for their chest pain. However, due to the high frequency of atypical features of chest pain and the public health consequences associated with missing acute coronary syndrome (ACS), it is imperative to properly evaluate these patients until diagnostic and serial testing can be completed. The reality is that observation and monitoring of low risk chest pain patients is expensive, costing an estimated $5-$10 billion annually (Chang et al., 2008). With the high cost associated with the evaluation and treatment of chest pain patients, the implementation of a cardiology NP service to facilitate and coordinate admission and discharge within less than 24 hours will save valuable resources while also decreasing cost.

In a study done by Baugh et al. (2012), that included a large number of chest pain data, it was estimated that a hospital saved an average of $1,572 per patient with an annual saving of $4.6 million and national cost saving of $3.1 billion annually by decreasing length of stay to less than twenty-four hours. A study done by Beck and Barret (2007) examined the difference in length of stay before and after an observation unit was established substantiated the effectiveness of observation units in decreasing length of stay.

Project Question

In an effort to improve operational costs while delivering quality care, healthcare facilities are constantly evaluating how services are being provided and the financial effectiveness of these services related to the viability of the organization (Schifalacqua, Mamula, & Mason, 2011). Implementing programs/interventions to improve patient care and outcomes is a part of the effort being employed by healthcare facilities to maximize their reimbursement potential, especially by focusing on improving patient care while decreasing cost of large target groups such as chest pain patients (Kline, Zeitouni, Hernandez-Nino & Jones, 2009). As APN's roles continue to expand, their value in patient care outcomes and fiscal contribution to the organization need to be measured. Data is required to add support for APN value in an effort to promote their role not only as health care providers, but also as being financial contributors towards the stability of their health care organizations. The DNP project question attempted to address both objectives by focusing on the role of the NP in reducing length of stay of low risk chest pain patients. The research question for this project was: "What is the relationship between a cardiology nurse practitioner service and the reduction of length of stay for low risk chest pain patients to less than 24 hours after admission?"

Evidence-Based Significance of the Project

The Institute of medicine (IOM) described high quality care as being patient-centered, timely, accountable, and efficient. As the health care delivery system continues to balance the issue of decreased number of primary care physicians with the rise in

health care costs; it has resulted in APNs assuming new roles in the delivery of patient care (Stanik-Hull et al., 2013). Hospitals are also taking a closer look at how to improve operational effectiveness while delivery high quality care and improving their financial performance (Hines & Yu, 2009). This environment has provided opportunities for the APNs' role to be examined and to determine their value in improving patient outcomes while supporting the financial stability of their organizations (Castner, Burmaster, Krabill, & McCourt, 2013).

With the implementation of the Affordable Care Act (ACA), health care organizations are being held accountable for the delivery of safe, cost effective and cost efficient quality care (Baugh et al., 2012). As stated by Hines and Yu (2009), reimbursements are linked to the quality of care provided and are decreased when patients suffer adverse events due to poor quality of care. This has resulted in efforts by healthcare organizations to implement best available evidence and system-wide practices in decision making at all levels of healthcare practices (Castner, Burmaster, Krabill, & McCourt, 2013). Using a cardiology NP service provided an example of how an APN focused team can lead to quality improvement in patient outcomes by following evidence based practice guidelines while conserving cost for the organization.

APNs are educationally prepared to take the lead in identifying opportunities to conserve costs and to enhance quality of care. This project showed that APNs in clinical leadership positions offered valuable incentives by providing evidence based cost effective care while contributing to the financial stability of the organization. It also

supported the growing body of evidence highlighting the importance of APNs in clinical leadership position who are following health care guidelines and protocols in the evaluation and treatment of patients resulting in improvement in health care outcomes (Stanik-Hull et al., 2013).

Definition of Terms

For the purpose of this project, the key terms are defined below:

Acute coronary syndrome: an umbrella term for both heart attack and unstable angina where blood supply to the heart is suddenly blocked. Heart attacks in this classification may or may not be characterized by alterations in Q waves (Mosby, 2014).

APN: A registered nurse who has achieved an advanced degree after completing 4 years of basic nursing education. Included in this group are nurse practitioners, clinical nurse specialists, midwives and nurse anesthetists (IOM, 2010).

Angina: pain or discomfort described as spasmodic, cramp like, or choking that is felt when there is insufficient blood to the heart muscle. May be associated with pain to arm, shoulder, neck, jaw or back (Mosby, 2014).

Cardiology nurse practitioner: a team led by nurse practitioners in charge of a low risk chest pain unit on a telemetry floor providing an integrated approach to further management of low risk chest pain patients. Provides close monitoring and coordination between cardiologists, emergency room health care providers as well as personnel in other departments in the treatment of these patients (Beck and Barret, 2007)

Chest pain: Discomfort or pain describe as tightness, heavy pressure, squeezing or crushing pain, sometimes radiate to the arm, shoulder, jaw or back (Mosby, 2014).

C-PORT: cardiovascular patient outcomes research team that is on call 24 hours. This team is a part of a hospital designated by the American Heart Association to perform emergency and schedule cardiac angioplasty (Kutcher et al., 2009).

Echocardiogram: a test of the action of the heart using ultrasound waves to produce a visual display, used for the diagnosis or monitoring of heart disease (Mosby, 2014).

Exercise stress test: Cardiac stress test is a test used in medicine and cardiology to measure the heart's ability to respond to external stress in a controlled clinical environment. The stress response is induced by exercise or drug stimulation (Mosby, 2014).

Low risk chest pain patients: Stable patients with no evidence of ischemia, with a normal or near normal electrocardiogram and negative baseline cardiac injury markers

Length of stay: defined as time when the cardiology nurse practitioner admits the patient to the service and continues to the time of discharge. Time is recorded in hours and minutes (Mosby, 2014).

Non ST elevated MI (NSTEMI): Myocardial infarction or acute myocardial infarction is the medical term used when part of the heart and the heart muscle is injured due to not enough oxygen but does not produce characteristic ST elevation on EKG (Albert,2007).

ST elevated MI (STEMI): The coronary artery is completely blocked off by the blood clot, and as a result virtually ALL the heart muscle being supplied by the affected artery starts to die (Pollack, Antman, & Hollander, 2008).

Assumptions and Limitations

Assumptions

After meeting with the chief of cardiology, the medical director of the ED, Director of medical record and the Director of case management at the study site, the assumption was made that hospital leadership would support the study. The current fiscal uncertainty of the hospital under study had led me to the assumption that the study would have been supported by all interested stakeholders. I made this assumption as the hospital was reviewing its various programs to determine which ones were improving reimbursements to the facility. I also assumed that the study would have contributed data to support the effectiveness of the established NP led program in improving length of stay of this large target population with the potential for high reimbursement for the facility. After meeting with the director of medical records, I also assumed that data collected three months before and three months after the implementation of the service would have been readily available. Another assumption that I made was that this study would add to the body of knowledge supporting the effectiveness of APNs in improving patient outcomes and improving quality care. I also assumed that APNs as acute care practice leaders were actively contributing to the financial aspect of the health care organization

Limitations

Despite the many advantages of using data obtained from medical records via retrospective electronic medical record review, there were also limitations to be considered. Limitations that I considered included the possibility of missing or incomplete data within the medical record, variability in the quality of documentation among healthcare personnel, records lacking specific patient information as well as not being able to verify the documented information. One limitation that was specific to this study was relying on the accuracy of data entry clerks. Data input was very important to the study, as the point of entry of these low risk chest pain patients determined if they qualified for the study. Point of entry information of these low risk chest pain patients were verified and entered into the computerized system by the data entry clerks in the emergency department. Accurately identifying whether the patient was admitted from the ED with all cardiac workup being initiated there or another point of entry such as a physician's office, another department, or clinic would have eliminated false data. Limitations must be acknowledged and kept to a minimum as analytical outcome of a study and the reliability of data is directly impacted by the rigor of data collection methods (Gregory & Radovinsky, 2012).

Summary

The purpose of the DNP project was to examine the effectiveness of a cardiology NP service on the reduction of length of stay of low risk chest pain patients to less than 24 hours after admission. Their role was examined in relationship with facilitating

admissions, coordinating, and evaluating diagnostic testing according to AHA guidelines and current evidence base practice (EBP) and facilitating a discharge.

As hospitals continue to re-evaluate their financial standing while meeting Medicare reimbursement criteria, they must face the reality of increasing patient outcomes while decreasing costs (Hines & Yu, 2009). The new challenge of health care organizations is focused on improving operational effectiveness by delivering a higher quality care and improving the financial performance of the faculty. This need for change has provided opportunities for APN's to demonstrate their value in improving patient outcomes while supporting financial performance. This project contributed to the body of knowledge linking APN's as clinical leaders in acute care management in improving patient outcomes and reducing healthcare cost to the organization.

Section 2: Review of Scholarly Evidence

Introduction

As APNs continue to assume leadership positions in healthcare organizations, they are being challenged to enhance quality of care while conserving cost (Brooten, Youngblut, Kutcher, & Bobo, 2004). APNs are meeting this challenge by adopting EBP guidelines throughout their practice setting. They are using the opportunity of leading quality improvement projects, such as the cardiology NP led service, to conserve costs while improving quality outcomes by adopting EBP guidelines in treating low risk chest patient to facilitate discharge within 24 hours of admission. Gifford, Davies, Tourangeau, and Lefebre (2011) identified nursing leadership as being influential in transferring resources findings into practices. It was against this background that the implementation of a cardiology led NP service emerged at the study site. The aim of the service was to provide quality care by adopting AHA EBP guidelines in treating low risk chest patients with a probability for ACS that was low but not sufficiently low to allow discharge. This section explored the evidence supporting APNs in assuming leadership positions in quality improvement projects such as a cardiology led team.

Search Process

Literature databases searched included CINAHL, Google Scholar, and MEDLINE. Search terms used included *chest pain, low risk chest pain, patient safety, nurse leadership, patient improvement, quality care, AHA guidelines, observation units,*

advance practice nurse, nurse practitioner, and *EBP*. The search was done in English. Data limiters such as years were not used as an earlier attempt did not yield extensive literature.

Specific Literature

This review relied on scholarly peer reviewed articles that addressed the effective evaluation of low risk chest pain patients and the impact of a cardiology NP service in decreasing length of stay to less than 24 hours after admission. It also inadvertently addressed other impacts of the NP service such as: increased patient satisfaction, financial gains to the organization, and improved quality of care using evidence based practice wording. Amsterdam et al. (2010) explored the challenge of rapidly identifying high-risk chest pain patients for immediate intervention from those with benign entities or low risk chest pain. The researcher examined the adherence of using EBP guidelines in diagnostic testing to rule out ischemia and the effect of applying other modalities including observation units staffed with APNs to expedite and facilitate discharge within less than 24 hours after admission (Amsterdam et al., 2010). According to Amsterdam et al. (2010), this combined approach is safe, accurate and cost effective in low risk chest pain patients presenting with chest pain.

Beck and Barret (2007) used a retrospective study addressing the significance of the positive relationship between emergency room APN's and decreased length of stay of low risk chest pain patients in an ER observation setting. The study further substantiated

the importance and value of the APN in decreasing length of stay and also identified their value in reducing hospital costs.

Farkough et.al (1998), conducted a prospective randomized study that evaluated the safety, efficiency and the financial savings associated with the implementation of observation units. The study was significant in that it not only found that there was a 45.8% reduction in hospital admissions for low and intermediate chest pain patients but also that it was cost effective. This study did substantiate existing evidence that a specialized focused team in an ER setting can be used to identify treat and safely discharge low risk chest pain patients safely without admission to the cardiac unit. It did not, however, identify if a special team including APNs were assigned to care for this group of low risk chest pain patients and the significance of their role in reducing length of stay.

A literature review conducted by Richardson and Storr (2010) concluded that there is a gap in literature supporting the contribution of the nurse as a part of the multidisciplinary team and his/her role in patient safety through empowerment, leadership, and teamwork. The study by Richardson and Storr (2010) also suggested that there was a need for further research to identify the influence of nurses as leaders in improving patient safety. Currently, there is limited evidence linking nurse leadership and empowerment to patient safety and quality outcome.

General Literature

Failure to detect ACS and inadvertently discharging these patients from the ED exceeds 2% of the 8 million people seen with a risk adjusted mortality ratio that is nearly 2-fold that of patients hospitalized for ACS (Amsterdam et al., 2010). With fewer than 5% of these patients presenting with chest pain having ST segment elevation MI and 25% for non ST elevation ACS, rapid optimal therapy for those with ACS must be balanced against recognizing those with non-critical chest pain (Amsterdam et al., 2010). Finding this balance will prevent extensive evaluation that is unnecessary, expensive, potentially dangerous, and an ineffective use of limited resources (Amsterdam et al., 2010).

The challenge for this facility was that rapid identification for those patients who need urgent care and those with low risk chest pain was decided by the ED physician. Despite the current AHA guidelines for treating adults with chest pain (Weingarten, 1994), providers are reluctant to discharge these patients from the ED without one or both confirmatory test to rule out MI or unstable angina. Rapid assessment of these patients to facilitate discharge within a specific timeframe was delayed due to lack of coordination of these diagnostic tests for low risk chest pain patients once acute MI had been ruled out. Despite these patients being seen in the ED and admitted by the cardiology team, confirmatory tests such as echocardiogram and nuclear testing were not being performed at the study site until these patients were transferred to the arrhythmia unit resulting in a delay in testing and evaluation of results. Compounding the issue was the fact that these

patients, though admitted to the telemetry unit, were considered a part of the general patient population without a focus of facilitating discharge within a given time frame**.**

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Summary

Beck and Barret (2007) identified chest pain as one of the most common complaints of patients who visited the emergency room. Chang et al. (2008) stated that an estimated $5-$10 billion was spent annually on evaluating patients who presented to the emergency room complaining of chest pain with 85% of these patients being diagnosed with non cardiac pain. The principal challenge for ED providers is rapid evaluation of patients who presented with chest pain to identify patients who needed immediate intervention and those with low risk chest pain who required further evaluation before discharge (Quinn, 2000). Beck and Barret (2007) retrospective study highlighted the positive relationship between APNs as team leaders in observation unit and decrease length of stay of low risk chest pain patients. The Farkough et al. (1998) study highlighted the cost effectiveness of observation units with a reduction in hospital admissions of intermediate and low risk chest pain patients.

Theoretical Frameworks

I used two theoretical frameworks to guide this study: the Donabedian model of quality care (Chelluri, 2008) and the Study of access to medical care (Aday & Andersen, 1974). Both theories were appropriate for this project as the Donabedian model provided a framework for examining health care services and evaluating the quality of care

provided while the Aday and Andersen theories evaluate the accessibility and delivery of care to patient populations. This project used both frameworks in focusing on the effectiveness of care delivery as it affected the quality of care and its impact on length of stay. Donabedian's theory examined the quality of care in clinical practice by evaluating three categories including structure, process, and outcomes as they relate to the healthcare organization (Gardner, Gardner, O'Connell, 2013). Donabedian's theory evaluated structure in the context in which care was delivered including: (a) appropriateness and accessibility of the facility in treating the patient; (b) financial stability of the facility; and, (c) availability of equipment to perform proper testing, evaluation, and treatment. These factors are important as they control how healthcare providers and staff function as well as determine the quality of care being delivered to the patient population. Process of care was addressed by examining the interoperability of systems from admission to discharge to determine their impact on diagnoses and treatment and how they affect the outcome of care (Gardner, Gardner, & O'Connell, 2013). According to the model, outcome can be seen as the most important indication of quality because improving patient health is the primary goal of the healthcare organization (Gardner, Gardner, & O'Connell, 2013).

As stated by Stanik-Hutt et al. (2013), the IOM (1990) defined quality in healthcare as the desired outcome of services provided that is in alignment with up to date professional knowledge. Donabedian supported the use of EBP guidelines in providing care as this provides for an established structure in measuring the effectiveness

of services provided (White & Dudley-Brown, 2012). Evaluating the effectiveness of the intervention (the cardiology NP service) in achieving the desired outcome (reducing length of stay) was the focus of this project. The cardiology NP service used the AHA established EBP guidelines citation in identifying and treating these low risk chest pain patients and in evaluating the quality care.

Aday and Andersen (1974) addressed the concept of "access to care" in a framework that evaluated the availability of health care services and its impact on patient outcomes. Access to health care can be evaluated by addressing outcomes of care as target population moves through the delivery system starting with admission and following through to discharge. Access as it relates to the health care organization delivery system was defined as how well the health care service was utilized, including the appropriate time interval and ease of transitioning through the system from the point of admission to discharge (Aday& Andersen,1974).This frame work allowed for evaluation of the NP led service and its impact on workflow of low risk chest pain patients from admission to discharge including reasons for delay or cancellation of tests that would have prevented discharge within the 24 hour time frame.

Summary

Nursing is a science as much as it is an art. It is this scientific base that has allowed APNs to make clinical decisions that are appropriate, cost effective, and efficacious for client outcomes (Polit, 2010). McEwen and Wills (2011) defined science as "the result of the relationship between the process of inquiry (research) and the product

of the knowledge (theory)" (p.393). A theoretical framework results from the building of knowledge that is generated from the research process, analysis, and interpretation of findings, and enables the scientist to use these facts to add to the body of existing research or EBP. Donabedian (Gardner, Gardner, &O'Connell, 2013) and Aday's and Andersen's (1974) theories were used as frameworks to guide this project as it examined the effectiveness of a service on the quality outcome of care. Both frameworks were appropriate for this DNP project as nursing science is a blending of knowledge that is both unique to nursing and knowledge that is borrowed from other disciplines**.**

Section 3: Methodology

Introduction

As the health care delivery system continues to balance the issue of rising health care costs with a decrease in reimbursement from Medicare, Medicaid, and HMOs, the focus on providing quality care to improve patient outcomes while reducing cost has resulted in organizational changes in many facilities (Baugh et al., 2012). This organizational change has resulted in APNs assuming new roles with wider scopes of practice and also new leadership responsibilities within these facilities. Hospitals are also taking a closer look at how to improve operational effectiveness while delivering high quality care and improving their financial performance (Hines &Yu, 2009). According to

the IOM, high quality care is patient centered, timely, efficient, and accountable and is the goal of all health care facilities in care delivery (Stanik-Hull, 2013). This environment provided the opportunity for the APNs' roles to be examined and to determine their value in improving patient outcomes while supporting the financial stability of their organizations. The project examined the role of APNs in usingEBP guidelines to reduce length of stay of low risk chest pain patients and in doing so improved patients' outcomes while reducing cost by discharging them within 24 hours. This section discusses the design and methodology of the project including data collection and analysis. It also includes a discussion of the population sampling as well as an evaluation for the project.

Project Design/Method

Due to the closure of the hospital and the inability of the researcher to obtain written permission to analyze and interpret data, it was beyond the scope of this paper to use, analyze and interpret data. However, discussion in this section addressed the appropriate methodology if data collection and analysis had been done. The design for this project was a comparative study that would have evaluated the effectiveness of an established cardiology NP service on reduction of length of stay of patients with low risk chest pain to less than 24 hours within this facility. A comparison would have been made using retrospective data obtained from medical records to evaluate the length of stay of these low risk chest pain patients. Data would have included patients age 18 years and older that were admitted three months prior to and three months after the implementation

of the cardiology NP service. Data would not have been collected from the first month when the program was implemented but would have started on the second month and ended at the fifth month.

Population and Sampling

I conducted this project in a 250 bed urban hospital setting. The facility was an AHA designated cardiac center with a 24-hour C-PORT team available for cardiac emergencies including ST elevation myocardial infarction and non-ST elevation myocardial infarction. The project would have compared the length of stay for patients diagnosed with low risk chest pain ages 18 and up who were admitted 3 months before the implementation of the cardiology NP service and those with low risk chest pain patients admitted 3 months after the implementation. Excluded from the project would be low risk chest pain patients directly admitted from the private physicians' office who would have bypassed the ED, from the clinic or other outpatient departments or laboratories where the cardiac work up would already have been initiated.

As the healthcare delivery system continues to redesign itself to meet the needs of an increasingly complex healthcare system, the nursing profession has responded by preparing nurses with advance degrees (Stanley, 2007). These nurses have the potential to influence health care outcomes as well as to participate and lead in the redesigning of care delivery models.

These NPs with advanced academic preparation can lead a team with the ultimate goal of improving health care outcomes for patients with low risk chest pain. Both NPs are graduates of a master degree program with a combined thirty-six years of nursing experience with ten years in practice as APNs. They have critical care experience, including ER and cardiology nursing, which allows them to provide leadership in implementation of the service.

Gifford et al. (2011) stated that leadership is vital in the translation of research into practice as well as in keeping the vision of the service in focus. Along with keeping the focus on the objectives of the service, these APNs also provided support and open dialogue with the other team members as well as influencing organizational structure and process changes to meet the goals of the project.

Data Collection

Institutional Review Board (IRB) approval was obtained from Walden University. After receiving same, approval would have then been obtained from the Chief of Cardiology and the Director of medical records to facilitate access to data before and after the service was implemented. Data obtained from the electronic medical record would have been de-identified to protect the identity of all the patients that were to be evaluated in the study. Data would have included all low risk chest pain patients that were admitted through the ER within the time frame established before and after the service were implemented.

Data Analysis

Comparative analysis would have been done to evaluate the reduction in length of stay of low risk chest pain patients to less than 24 hours after the NP lead service was implemented. A two tailed independent *t* test analysis technique would have been used in data analysis for this study. The *t* test is considered one of the most common parametric analyses that are used to test for significance differences between two samples and would have been appropriate for this study. It would have been used to examine data from two groups of low risk chest pain patients before and after the NP cardiology team was implemented and with the intention of drawing inferences about the service that was implemented (Grove, Burns, & Gray, 2013). This *t* test would have allowed for the testing of the null and alternate hypothesis of whether or not the NP service was effective in decreasing length of stay to less than 24 hours within a Confidence interval (CI) of 95% with *p* value 0.05. Confidence intervals are established to reduce the risk of errors in analyzing the data and addresses how precise is the estimate being made (Polit, 2010).

Project Evaluation Plan

An evaluation plan was needed to determine the effectiveness of the project by evaluating the project goals as well as the desired outcome (White & Dudley-Brown, 2012). A summative evaluation would have been an appropriate plan as it would have investigated the effectiveness of the NP service in reducing length of stay of patients with low risk chest pain. This type of evaluation, also known as an outcome evaluation, investigates to what extent the intervention is achieving its outcomes in the target

population (CDC.gov). An evaluation plan for this study must address measures that are significant for the patients, providers, and stakeholders as the impact on these groups will determine the sustainability of the intervention (Planas, 2008).

In addressing missing data associated with chart review, a listwise deletion, also known as complete case analysis, would have been applied allowing for comparability and simplicity in analysis (Howell, 2012). Despite a small sample size, listwise deletion will lead to unbiased parameter studies. A comparative analysis of quantitative data using paired two tailed *t* test would have evaluated not only the change in length of stay of patients with low risk chest pain but also the cost that was associated with the change. This summative evaluation plan would have provided evidence that would have allowed the researcher to provide data to support sustainability of the program with the goal of expanding the role of NPs in leading similar interventions associated with chronic diseases with extended length of stay.

Summary

Improvement of quality outcomes of care while reducing healthcare cost has taken on new urgency for healthcare organizations. As many facilities move toward a business model of care, focusing on quality of care while reducing cost of care has resulted in re-evaluation or implementation of programs or interventions with the intention to achieve both goals. This DNP project evaluated one such program to determine the effectiveness of a NP lead cardiology team in reducing length of stay of low risk chest pain patients to less than 24 hours after admission. This project has the

potential of contributing data to add to the body of knowledge that supports the APNs' roles in using EBP guidelines to improve patient outcomes while contributing to the financial stability of the healthcare organization.

Section 4: Findings, Discussion and Implications

Introduction

The purpose of this project was to evaluate the effectiveness of an established NP led service on the reduction of length of stay of low risk patients with chest pain. The project's goal was to highlight the use of EBP guidelines in improving patient outcomes while decreasing cost. Closure of the hospital on May 22, 2014 resulted in the inability to move forward with the project as planned as data collection and analysis were not completed at that time. Collection and analysis of data before and after the program was implemented were required for the comparative study to determine the effectiveness of the intervention. Prior to hospital closure, written permission was obtained from the nursing administrator to collect and use the retrospective data that was needed for the study. Walden's IRB required a signed Data use agreement from the facility and same could not be obtained since the hospital was closed. Multiple attempts were made to the IRB administrators of the affiliated facility to obtain same but they were unable to determine who could give permission for the data to be used as the hospital no longer existed and this DNP student author was not a current employee of the affiliated hospital.

Walden granted approval to move forward with the study without data collection and analysis. This section will focus on the evaluation of the anticipated findings. The findings will be addressed in the context of both Donabedian's theory of quality care and Aday and Anderson's theory of access to care. Literature will be reviewed to support the

findings as they relate to the project. The section will also address the implications of the anticipated findings on clinical practice, future research and its impact on social change. The project's strengths, limitations, and recommendations for future study will also be discussed. Self-analysis as a scholar, practitioner, project developer, and professional will also be a part of the discussion in this section.

Summary and Evaluation of Findings

Despite many hospitals continuing to struggle financially, they have responded to the need for re-organization by examining their various programs and departments to identify areas for improvements, including mergers and the elimination or re-design of new programs in a cost saving effort. Evaluation of the cardiology department and the treatment of the low risk patient with chest pain with respect to their length of stay were highlighted as an area of concern at a time when the facility was facing a financial crisis, including a merger or possible closure. Patients with low risk chest pain have proven to be costly to hospitals in the United States due to prolonged length of stay (Farkough et.al, 1998). The five million patients with chest pain admitted annually to hospitals had an average length of stay of 1.9 days and a mean hospital charge of $4,135. Of this group, only 6 to 15% were at a low risk for a cardiovascular event, thus targeting this group for an intervention to reduce length of stay could improve patient outcomes as well as reduce cost to the organization (Farkough et.al, 1998).

Before the cardiology NP service was established by the chief of cardiology, all chest pain patients in the ER were seen and evaluated by the cardiology fellows who

were on duty. The cardiology fellows would assign the patients to the residents and interns for admission to the CCU and telemetry units. This established practice did not identify patients with low risk for chest pain apart from the general cardiac patient population, and so there was no priority in ordering appropriate tests to evaluate and facilitate early discharge. This established practice of admission of patients with low risk chest pain resulted in increased LOS due to delaying of tests, inappropriate tests being ordered, as well as cancellation of tests due to lack of coordination between departments. Identifying this group of patients with low risk for chest pain in an effort to improve patient outcomes meant providing more focused care. Having this group of patients as a part of the general population and being assigned to the residents and interns had resulted in fragmented and delayed patient care and presented an opportunity for nursing leadership to be involved in the redesign of care for this group of patients.

New roles have emerged for APNs in response to the demand for quality care and improvement of patient outcomes (Stanik-Hull et al., 2013). This project provided an opportunity of leadership for APNs to use EBP guidelines in improving patient outcomes by decreasing LOS (Castner, Burmaster, Krabill, & McCourt (2013). According to Gifford et al (2010), the effective use of EBP guidelines in clinical practice is fragmented despite knowing that clinical practice guidelines can help to bridge the gap between research and practice.

The APN acting as a leader on this project helped to bridge the gap by translating the findings of an established EBP in the treatment of patients with low risk chest pain.

Adopting established EBP guidelines, such as the AHA guidelines in treating patients with low risk for chest pain, led to streamlining the care of these patients and allowed for recommendations to be made to improve practice and patient outcomes (Gifford et al, 2010).

The need for focused care for the group of low risk patients with chest pain resulted in a NP led cardiology team consisting of two NP's working ten hour shifts Monday through Friday. They were in charge of evaluating, admitting, treating, and discharging patients with low risk chest pain who met the established criteria of being eighteen years and older and were admitted from the emergency room without a cardiac work up being initiated elsewhere. Adopting AHA EBP guidelines in the treatment of patients with low risk chest pain allowed for streamlining of care that resulted in a decreased LOS. Donabedian's theoretical framework supports the use of established guidelines in improving patient care (Dudley & White- Brown, 2012). Having an established EBP guideline also allowed for appropriate care of patients overnight when the NP led team was off duty facilitating continuity of care. Aday and Anderson's framework addresses "Access to care" as providing equal and affordable care in a well-defined system (Aday & Anderson, 1974).

Lack of data for analysis due to hospital closure meant there were no results to validate the effectiveness of the NP led service but there was evidence supporting the effectiveness and efficiency of nurses with advanced knowledge in a specialized practice area. According to Brooten, Youngblut, Kutcher, and Bobo (2004), documented data

showed a decrease in LOS and reduced costs associated with CHF and geriatric patients cared for by APNS' in acute care settings. This project being led by a team of NPs was crucial to the success as they were able to provide specific care to this focus group. Being the leader allowed for coordination of care between departments with both NPs following up on tests being ordered and completed in a timely fashion and communicating with the patients primary physicians. The streamlining of care allowed for a faster turnaround time in patient care and resulted in discharging of patients within an acceptable time frame.

Implications

Practice

As APNs continue to assume more leadership roles and responsibilities in direct patient care, evidence is needed to support their impact on the quality of care being provided as well as their effect on patient outcomes. Being able to add evidence to the body of knowledge that supports the NP role in improving patient outcomes will create more opportunities for APNs in direct patient care (Stanik-Hutt et al., 2013). This is a positive response in regard to practice as it supports APNs to work as leaders in a collaborative team that includes physicians. Positive impact from the collaboration will lay the foundation for other nurse clinicians in the facility to move confidently into identifying and spearheading other projects for improvement knowing that there is support to move these projects forward from design through to implementation. Being leaders in EBP projects that improve patient outcomes empowers clinicians to embrace

future opportunities to design and implement projects that will positively impact their roles and practice (Kenny, Richard, Ceniceros, &Blaize, 2010).

The project highlights the emergence of the APN, not only as a clinician but also as a scientist, adding to the gap in scientific knowledge and making valuable contribution to EBP. It has the potential of changing the culture of the facility for future projects and grand round opportunities by using this opportunity to highlight the APN as a leader. Identifying the nurse as the main speaker or collaborator of a project being presented during grand rounds will validate their role as a scientist as well as a clinician using relevant research to deliver effective and safe nursing interventions (Mallory, 2010).

Future Research

The implementation of the study in another facility would allow for analysis of data that would provide further evidence to support the importance of APNs in using EBP to contribute to the decrease in LOS of patients with low risk chest pain in this facility. It also supports the future implementation of EBP guidelines in the reduction of LOS in patients with other chronic diseases. Future research could replicate the study in other facilities to provide additional evidence to support using EBP to streamline care of patients to facilitate decrease LOS and improve patient care outcomes. Participating in EBP improvement projects will contribute to reducing the gap between evidence based care and the quality of care being delivered in the US. This concern was expressed by the IOM in its 2001 report: *Crossing the Quality Chasm: A new health system for the 21st century* (Goeschel, 2011).

Social Change

As APNs continue to assume more leadership roles, their contribution to social change and their effect on health care is becoming more visible. This project has the potential to change the culture of how low risk patients with chest pain are identified, diagnosed, and treated in hospitals throughout the country. Adapting the AHA EBP guidelines in treating patients with a low risk for chest pain has resulted in streamlining the entire process of care from admission to discharge. Adopting EBP guidelines has resulted in the reduction in duplication and cancellation of diagnostic tests and or procedures due to miscommunication between departments. Streamlining of the care of this group of patients has also resulted in decreased use of valuable health care resources as the patients do not require the same diagnostic tests and procedures as is standard for the high risk patient with chest pain. Being able to conserve resources by streamlining the care of patients and improving patient care can have a significant impact on an organization's financial status. This is especially important at a time when health care costs are increasing and reimbursement for care is linked to LOS and re-admissions (Beck & Barrett, 2007).

The project also highlights the potential of APNs to work independently of physicians in redesigning and leading programs that will positively impact the care of patients. The APN's role as the leader of the team independently coordinating and transitioning patient successfully throughout the process has the potential for them to assume more leadership roles in other practice areas such as free standing clinics, urgent

care centers and their own private practices. Being able to replicate this project with other chronic diseases with high LOS will also have significant impact on how care is coordinated for diseases such as congested heart failure (CHF), diabetes mellitus (DM), asthma, sickle cell disease (SCD) and chronic obstructive pulmonary disease (COPD).

The patient being the central focus of the team allowed for a more individualized approach to patient care. Replication of this project in the treatment of other chronic diseases will allow for an established relationship with these patients, thereby allowing for easier communication, building of trust, and coordination of care with community agencies involved with the patient. Aday and Anderson's framework for the study of Access to medical care (1974) addressed the continuity and coordination of medical services as it is associated with particular diseases and the importance of integration of services to improve patient care. The APN as a leader of specific diseases focused teams will allow for this integration of services relevant for each disease process. This will enable the transition of patients through the system with less duplication of treatments and services and instead will have established an effective treatment and coordination of care that will prevent frequent re-admissions, decrease LOS, and improve patient outcomes.

As health care organizations continue to adjust to pay modernization, the redesigning of the care delivery system, and the transformation of existing models of care, nurses need to be visible and vocal throughout the process (Fyffe, 2009). Recognizing that it is the social responsibility of nurses to advocate for the needs of

patients, including the implementation of programs that will improve patient care provides an opportunity to influence policy in the treatment of patients with low risk chest pain at a local and national level (Tyler-Viola et al., 2009).

As APNs' roles continue to expand, their role must be examined in regard to their social obligation to provide care that is accessible and equal and being able to streamline the care for patients with low risk chest pain as well as other chronic diseases will address this issue. Development of policies that will facilitate replication of this project globally will allow for equal access of care to all patients with low risk chest pain while meeting their social responsibility of nurses improving the health care of the public. Social responsibility is part of the tradition of nursing as Florence Nightingale, Lillian Wald, and Lavinia Dock were early social activists who recognized and embraced social responsibility as being directly linked to the profession of nursing (Tyler-Viola et al., 2009).

Policy

As healthcare care reform continues, APNs have the opportunity of becoming actively engage in using policy as a leverage tool to promote social change (Ridenour & Trautman, 2009). Dissemination and utilization of new knowledge from nursing research can be influential in policy changes. This project has addressed the three main dimensions of health care reform which will improve the overall health of the population. These dimensions are providing care that is cost effective, equitable and of a quality that

is standardized (Ridenour &Trautman, 2009). Identifying patients with low risk for chest pain and adopting an established AHA EBP guideline in the treatment of these patients addresses the call for standardization in advancing the healthcare reform policy.

APNs are academically and clinically prepared to engage in research to provide data that will contribute to change in policy to improve the quality and delivery of patient care. *The Essentials of Doctoral Education for Advanced Nursing Practice, Essential V: Healthcare Policy for Advocacy in Health Care* stated that DNP graduates are prepared to not only design, implement and advocate for policy reforms but can also influence policy formation due to their clinical practice. Being at the forefront in policy and decision making will allow the APN an opportunity to be influential in changing the landscape of how healthcare and the profession of nursing will move forward in the future.

Project Strengths and Limitations

Strengths

The project had the support of the Director of nursing and the other major stakeholders, including the departmental head of cardiology. The project presented an opportunity to redesign the care of a high volume group of patients with the potential for a high reimbursement opportunity for the organization at a time when the facility was facing possible closure due to a financial shortfall. According to Planas (2008), having stakeholders agreeing on the overall goal of the project and having a vested interest in the project facilitated an easier buy-in.

An established collaborative relationship with the stakeholders was also another strength that facilitated the project. Being a member of the staff within the facility for at least twenty-six years and having worked in various roles and departments with these stakeholders allowed for an easier communication between groups based on the previous opportunities of working together (Planas, 2008). Understanding that administration and clinicians share the common goal of working towards improving patient outcomes also provided the opportunity to gain support for the project (Goeshel, 2011).

Adopting an established AHA EBP guideline in the treatment of low risk patient with chest pain is also strength of the project. EBP guidelines are the established gold standard for patient care and are used to promote quality health outcomes and to standardize care for selected diseases (Grove, Burns, & Gray, 2013). Established EBP guidelines are also easier to understand and are feasible to implement, allowing for stakeholders to easily buy- in to the intervention, as well as for the guidelines to be easily adopted into every day practice (Planas, 2008).

Limitations

One limitation of the project was that the two NPs were only present during the days on a ten-hour individual schedule, providing coverage between 7 am to 7 pm. This meant they had to rely on the medical staff and the assigned RNs' to maintain nothing by mouth status (NPO) on these patients overnight, as well as to obtain the serial cardiac enzymes ordered in compliance with the AHA guidelines. Following AHA guidelines in the treatment of low risk patients with chest pain required the patient be NPO overnight

to facilitate for the nuclear stress test in the morning. Failure to maintain NPO status would result in the test being delayed and would prevent discharge within the acceptable time frame.

Another limitation to the study was the closure of the hospital as this resulted in data collection for analysis to confirm consistency of findings with past research studies not being done. According to Groves, Burns and Gray (2013) this limitation must be identified as the refining of scientific knowledge for the nursing profession and development of nursing theories requires consistency in findings across studies. Implementation of the study including collection and analysis of data in another facility will address this limitation thereby providing added knowledge based on the findings of the relevant data analysis.

Recommendations

Adding data collection and analysis of that data in a future project that evaluates the effectiveness of APNs in improving patient outcomes will contribute information to support the existing body of knowledge that validates the contribution of the APN to practice. Data collection and analysis will also contribute information to support existing knowledge that utilizing EBP guidelines in the treatment of patients with low risk chest pain will decrease length of stay and conserve resources, as well as increase patient and provider satisfaction. Having the opportunity to collect and use retrospective data from medical records in a future project in relation to improving clinical practice and outcomes is highly practical (Gregory & Radovinsky, 2012). Being able to translate the data

collected will provide evidence that has the potential to contribute to the sustainability of the project as well as validate the effectiveness of the new and expanding roles of APNs (Planas, 2008).

Analysis of Self

Scholar

Pape and Robert (2011), in defining scholarship, utilized Boyer's model of nursing scholarship including the scholarship of discovery, integration application, and teaching. Boyer's model allows for the clinician to be recognized as a scholar (Robert & Pape, 2011). The scholarship of practice (application) has being identified as an integral component in the advancement of clinical knowledge as well as in attaining clinical competency within the discipline (AACN). As noted by Brewer, Brewer, and Schultz (2009), the clinical scholarship of application addresses what can be done to improve practice by introducing scholarly inquiry into everyday occurrences (Robert & Pape, 2011). This DNP project was initiated after identifying that low risk patient with chest pain were not being evaluated and treated within an acceptable time frame, resulting in an increase in LOS in this facility. As a DNP scholar, the scholarship of practice is being able to apply knowledge to solve an identified problem, as well as to translate, disseminate and integrate new knowledge into practice (Terry, 2012). This project improvement initiative allowed for EBP guidelines to be adopted in improving patient

care outcomes. Adopting the AHA guidelines into the treatment of low risk chest pain patients allowed for the application of evidence to guide improvement in practice and patient care outcomes (Terry, 2012).

Practitioner

The current health care environment has allowed APNs to expand their roles to meet the growing needs of the population (Stanik-Hutt et al., 2013). As APNs continue to assume more responsibilities in the new roles, they are being challenged to improve patient outcomes by enhancing quality of care while conserving costs within the organization (Castner, Burmaster, Krabill, & McCourt, 2013). The literature review clearly supports the use of Donabedian's framework as it suggested that the quality of patient care could be improved with established standards of care, structure and process (Stanik-Hutt et al, 2013). In the US, less than 55% of adults are receiving best evidence recommended care resulting in increased clinical inefficiencies and financial waste (Stanik-Hutt et al, 2013). The literature review supports the need for APN's to take the lead in identifying opportunities to enhance quality of care while conserving costs (Castner, Burmaster, Krabill, & McCourt, 2013). A review of literature by Weingarten et al. (1994) supported the use of practice guidelines by practitioners in their clinical decision process. Following AHA guidelines in the treatment of chest pain is also supported by Donabedian's framework as it allows for standardization of care coordination with the goal of decreasing length of stay for this group of patients (Chelluri, 2008).

Project Developer

As a project developer, it was critical to understand that for change to be effective at any level it required leadership effort, time and resources (Bevan, 2010). The identification of key stakeholders and the need for change at a critical time when the hospital was struggling financially allowed for sustainability of the project. Evidence shows that sustainable improvements in a system are created when the system has the capability to change itself (Bevan, 2010). Identifying an opportunity and assuming leadership of the project as a project developer is in direct response to the IOM Report brief (2010), *The Future of Nursing: Leading Change, advancing Health.* The IOM Report brief (2010) identified that the nurse who has an advance degree is prepared to be a full partner in identifying problems, redesigning, improving, implementing, and evaluating programs to improve health care systems and patient outcomes.

My role of a project developer required keeping the stakeholders interested in my DNP project despite the financial instability of the hospital and the threat of a possible hospital closure. Keeping the focus on increased financial gains by decreasing LOS of the patient with low risk chest pain kept the project in alignment with the immediate needs of the facility at that time. Understanding that being able to identify and discuss short term wins such as less cancellation of tests due to the following of the EBP AHA guidelines in the treatment of patients with low risk chest pain allowed for continued stakeholder's engagement in seeing the final outcome of the project (Kotter, 2007).

Professional

The IOM (2010) report, *"The Future of Nursing: Leading Change, Advancing Health",* addressed the role of the nurse in the transformation of the profession. The transformation has allowed for nurses to be at the forefront in health care to lead change as educators, innovators, policing makers, clinicians, and scientists (Brooten, Youngblut, Kutcher, & Bobo, 2004). As a DNP prepared nurse assuming full partnership in identifying a problem, devising an improvement project with established goals and outcomes, and working collaboratively with other members of the health team has allowed for the development of new leadership skills.

Being able to communicate with a multidisciplinary team during the DNP project has allowed for exploration of future job opportunities to influence or change the culture of nursing practice. Understanding that given the opportunity to work as a transformational leader will allow for communication of change initiatives that can incorporate EBP guidelines into future nursing care practices (Bamford-Wade & Moss, 2010). According to Ridenour and Trautman (2009), in the US healthcare care is non-systematic and is focused on acute illness instead of being coordinated and comprehensive. Continuation of this model will result in 34% of the country's economic output being spent on health care by 2040, an increase from 18% in 2009 (Ridenour &Trautman, 2009). In discussing specific aims for improvement, the urgency of collaboration of care between healthcare professionals is highlighted in the IOM (Kotter, 2001) *Leading Change: Why Transformation Efforts Fail.* These six aims focused on the

need for healthcare to be safe, effective, timely, and efficient and patient centered. Adapting EBP guidelines in the treatment of chronic diseases will not only streamline the care for these patients but will also lay the groundwork for collaboration between multidisciplinary teams working together to achieve improved patients outcome.

Summary and Conclusions

The objective of this project was to determine the effectiveness of APNs in reducing the length of stay of low risk chest pain patients. The research question "What is the relationship between a Cardiology nurse practitioner service and the reduction of length of stay for low risk patients with chest pain to less than 24 hours after admission?", will add knowledge to the gap supporting APNs role in improving patient outcomes. Literature reviewed supported the role of APNs in improving patient outcomes by utilizing EBP guidelines resulting in a decrease in LOS for low risk chest pain patients. Choosing an established AHA guideline in the treatment of low risk patient with chest pain facilitated a smooth transition of evidence into practice. According to Goeschel (2011), transition was easy because an established guideline allowed for high impact on outcomes, was a low burden to implement and targeted behaviors instead of technology. Providing evidence supporting the role of APNs at a time when new roles are emerging for the nurse leader and patients' expectations are high is crucial to the future image of the profession. The IOM report (2001), recommended that patient care needs be based on the best scientific knowledge requires that evidence be available to support APN's in these new roles (Mallory, 2010). This DNP project has attempted to contribute

knowledge to support the role of the APN in using EBP guidelines to improve the quality of care being provided to patients and in doing so has contributed to decreasing the gap between research, knowledge and practice (Mallory, 2010).

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