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# Training for Advanced Practice Providers in a Heart Failure Unit

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*Walden University*

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# Walden University

College of Health Sciences

This is to certify that the doctoral study by

Merlyn Chua

has been found to be complete and satisfactory in all respects,  
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the review committee have been made.

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Walden University  
2018

Abstract

Training for Advanced Practice Providers in a Heart Failure Unit

by

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MSN, FNP Saint Xavier University, 1999

BSN, West Visayas State University, 1986

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

February 2019

## Abstract

Information from anecdotal interviews at a practicum site indicated a lack of training for advanced practice providers (APPs) in core competencies critical for effective practice in a heart failure (HF) unit. The goal of this project was to assess the APPs' verbal reports and develop HF unit-specific training for APPs. The practice-focused question examined whether unit-specific training for HF APPs improved knowledge and skills in HF management. The Johns Hopkins nursing evidence-based practice model and Knowles's adult learning theory were used to create a survey, a focus group, and a pre/posttest assessment of knowledge and skills gap. Descriptive and inferential statistics could be used to analyze pre/post survey data, and thematic analysis could be used to analyze focus group data. Assessment data could be used to develop a targeted HF program based on identified skill deficiencies. The implications of this project related to social change are the potential to increase APPs' knowledge, job engagement, and retention. The program could affect length of stay and 30-day readmission of patients in the HF unit.

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## Dedication

This project is dedicated to my family. For my husband, Dr. Serafin Chua, who supported me in many ways throughout this academic journey. I am truly grateful for the love, support, and kindness. For my daughter, Zelig, who is my angel, and avid advocate, you are my ultimate inspiration.

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## Section 1: Overview of the Evidence-Based Project

### **Introduction**

Heart failure (HF) remains a major healthcare issue in the United States (Bui, Horwich, & Fonarow, 2011). HF is on the rise affecting Americans ages 20 and older at about 5.7 million from 2009 to 2012 and nearly 6.5 million from 2011 to 2014 according to American Heart Association Council (Benjamin et al., 2018). It is projected that by 2030, HF prevalence will increase by 46% (Heidenreich et al., 2013). HF leads to significant morbidity and mortality and causes financial burden to the U.S. healthcare system. For example, with value-based reimbursement, hospitals incur rising penalties for 30-day readmissions for HF patients. Recent data from CMS July 2011 to 2014 on 30-day readmission rates for HF are approximately 22% (Boccuti & Casillas, 2017). This resulted in \$26 billion in extra Medicare expenses, \$17 billion of which deemed preventable (Rau, 2014a). Due to this, HF treatment and care are ongoing targets for intervention (Go et al., 2013; Heidenreich et al., 2013).

The complexity of managing HF is due to the increasing number of therapeutic options available to the patient and the clinician (Hamel, Gaugler, Porta, & Hadidi, 2018). For example, acute medical management, device therapy, ventricular assist device (VADs) all require a number of decisions to be made in their implementation. Physicians, nurses, cardiologists, and other clinicians are called on to offer information that will help inform and enable the patient and their families to make choices about treatment options consistent with their values and preferences.

Care for HF patients requires a multidisciplinary team with advanced practice providers (APPs) increasingly being asked to act independently on behalf of the cardiologist (Gheorghide, Vaduganathan, Fonarow, & Bonow, 2013; Heidenreich et al., 2013). Over time, there has been a consistent call for more action and readiness on the part of APPs. Because of this, APPs will need to have advanced knowledge and skills (Heidenreich et al., 2013). Rigorous orientation training for APPs has also been noted as a significant need in an acute care setting in the hospital (Goldschmidt, Rust, Torowicz, & Kolb, 2011).

Cardiology staff and management in the HF unit at a large Midwestern hospital anecdotally reported the need for HF unit-specific training for APPs. The current state of training for APPs at the practicum site includes shadowing, conferences, and grand rounds, which were deficient in topics relevant to the more immediate needs of the HF unit. Therefore, the goal of this DNP project was to further investigate the need for training specific to the APPs of the HF unit and develop training if needed.

### **Problem Statement**

APPs lack HF unit-specific training that contributes to less than optimal care, not in keeping with current HF management recommendations. Current practice for APPs at the practicum site during my attendance was to receive updates in training by attending a variety of hospital-wide conferences and grand rounds. However, the training topics were not always specific to HF and APPs could not always attend the conferences.

One of the training options for APPs is -the Cardiology Fellow Noon Conference, which includes a topic in cardiology selected by academic faculty. This conference is

structured for cardiology fellows and is given every day. Attendees often included cardiology fellows (mandatory), medical students and cardiology APPs, but the topics are aimed at cardiology fellows. This conference includes a variety of topics relevant to fellowship in cardiology. APP attendance at this conference is optional, and APPs choose to attend based on the conference's application to HF.

The Monday Conference includes a topic in cardiology selected by academic faculty. Topics chosen for this conference include many of the latest topics in cardiology. This conference is open for APPs to attend each Monday throughout the year and is structured for a general audience. Attendees at Monday Conference could include cardiologists of different specialties, cardiology fellows, cardiac APPs, and medical students rotating in cardiology. APP attendance at this conference is also optional and APPs choose to attend based on their availability.

Credentialed presenters led grand rounds for APPs. Essential topics are based upon the surveys obtained from APPs hospital-wide. Grand rounds are conducted monthly and its attendees include APPs from different specialties across the healthcare system. Attendance is not mandatory. Because the topics are not specific to any one unit in the hospital, they are general in nature; the grand rounds fail to meet the specific needs of the APPs in the HF Unit.

Anecdotal reports from the cardiology unit stakeholders such as APPs, managers, cardiology fellows, and cardiology attending physicians suggested the need to improve knowledge and skills of APPs in HF management. This was particularly true when caring for complex and advanced HF patients. Comments received revolved around APPs

needing more exposure to training in EKG interpretation, radiography, and cardiac imaging. One example of the need for unit-specific training comes from one of the nurse practitioners (NPs) verbalizing that APPs should be required to understand the complex hemodynamics of HF without prior instruction in hemodynamics.

Hospital Compare data confirms that quality of care for HF patients can lead to increasing Medicare penalties (Boccuti & Casillas, 2017). For example, the Medicare 30-day readmission penalties for the practicum site for fiscal years 2013, 2014 and 2015 were 0.72%, 0.38%, and 1.98% respectively (Rau, 2014b). Data from the practicum site also showed that APPs in HF telemetry were above the national benchmark in 30-day readmissions for 2014-2015 (24.19 % compared to the national benchmark of 21.9%). This shows that there is more room to improve in HF readmissions at this hospital. Therefore this study hypothesizes that training APPs will improve length of stay and 30-day readmissions over time.

A HF training program has other benefits. Training is necessary to maximize the APPs' ability to practice at the full extent of their licensure and to complement physicians' skills and knowledge. Evidence has shown that mentorship, residency programs, fellowships, and postgraduate programs add to educational and clinical training and improve knowledge and skills (Doerksen, 2010; Thabault, Mylott, & Patterson, 2015; Zapatka, Cornelius, Edwards, Meyer, & Brienza, 2014). Because APPs are an integral part of medicine and nursing, they must be trained specifically and systematically to provide the highest quality care that is safe and timely.



I used the Johns Hopkins nursing evidenced-based practice (JHNEBP) model question development tool (see Appendix A) to develop the problem statement. The questions guide the team in focusing to the practice problem. The practice-focused question used the PICO format, which was first introduced by Richardson, Wilson, Nishikawa, and Hayward (1995) and is the criteria for framing and focusing a research question. PICO helps to format the problem statement and gives clues on how to search for keywords to address the focused question. This is formalized as follows:

- **P = Population:** APPs (NPs and physician assistants [PAs]).
- **I = Intervention:** Unit-specific HF educational training.
- **C = Comparison:** The current state of educational training.
- **O = Outcome:** Increased knowledge and skills of APPs in the management of acute HF which will ultimately contribute to decreased hospital lengths of stay and the readmission rates

### **Purpose Statement**

The purpose of this DNP project was to close the gap in practice by increasing the knowledge and skills of APPs through a HF unit-specific training, to create a HF program grounded in evidence, and to improve the current state of training for APPs in a HF unit.

### **Gap in Practice**

Anecdotal reports in a large hospital HF unit suggested that APPs were not ordering required tests for patients correctly. Further investigation revealed that HF APPs lacked training that created a gap in practice. This gap contributed to long wait times for testing in the echo lab, nuclear lab and cardiac imaging. Addressing this gap had the

potential to improve the current state of APP training in the HF unit and decrease wait times. This training could also potentially decrease HF unit length of stay and 30-day readmission rates over the long term.

### **Practice-Focused Question**

The guiding practice-focused question was: Does HF unit-specific training for HF APPs improve knowledge and skills in HF management better than the current state of training?

### **Nature of the Doctoral Project**

Guided by anecdotal input, I had planned to collect data from the HF unit APPs. A needs assessment survey and a focus group would have assessed the APPs on their HF unit training needs. Then, before and after implementation of the training, a pretest and posttest would have assessed knowledge acquisition from the training. A follow up questionnaire post training would have gathered opinions on the quality and helpfulness of the training program.

### **Significance**

The stakeholders of the project included the cardiologists, APPs, the nursing unit, the hospital, its patients, and their families. The program could have built confidence and trust between APPs and the cardiologists while possibly improving communication among the extended team. Communication among team members and providers expedites flow of care and prevents medical errors (Dingley, Daugherty, Derieg, & Persing, 2008; Vermeir et al., 2015). APPs' knowledge and skills in the HF unit may improve, allowing them to practice to the full extent of their advanced licensure and

exemplify the profession (Institute of Medicine, 2010). Furthermore, this program could have facilitated safe, timely cardiac care and potentially decreased length of stay and 30-day readmission of HF patients in the long term.

The potential contributions of the DNP project are (a) advancing knowledge of APPs who manage complex cardiac patients; (b) providing interprofessional collaboration and decision-making that benefits current and future APPs; and (c) serving as a model for orientation of cardiac APPs across the institution for both inpatients and outpatients.

This DNP project aligns with the organization's goal to provide superior patient care. The unit-specific training may have provided advanced knowledge significant in preparing HF APPs in the provision of high quality, safe and cost-effective healthcare. This program could have potentially decreased penalties imposed by the CMS by acting on length of stay and 30-day return rates. This project may have prepared APPs to provide the best care for HF patients and their families improving compliance.

This DNP project can contribute to nursing practice with the following expected outcomes.

1. APPs would expand their knowledge, meeting the workplace-based educational needs.
2. Continuous learning, growth and success would help attract top notch APP talent.
3. Proper training that meets the needs of a high patient volume unit could potentially decrease turnover due to exhaustion and burnout.

Successful implementation of this project may have suggested potential effectiveness in other units of the hospital. This training could have served as a model for orientation of cardiac APPs across the institution in both the inpatient and outpatient settings. Unit-specific training could have empowered HF APPs to practice competently at the full extent of their knowledge and skills.

### **Implications for Social Change**

Having unit-specific training for APPs could have potentially decreased the length of stay and 30-day readmissions system wide. This project may have been significant in promoting APPs as a model of change in the hospital setting. Potentially, this could result in a shorter hospital stay and decreased likelihood of readmission.

Increasing APPs knowledge and skills to care for HF patients could have enabled them to reconcile differences between theory and practice. This unit-specific training could have potentially introduced new concepts and mastery of new skills to the APPs. Recent research shows that educational support both empowers and boosts morale in the workplace. This program could have potentially decreased APP turnover rates and contributed to making the unit a preferred workplace.

### **Summary**

Section 1 was a short synopsis of the epidemiology of HF, including its high morbidity and mortality. The growing financial cost for extended length of stay and 30-day readmission rates in the healthcare system was also outlined. Because of the complexities of HF management and the issue of 30-day readmission, the importance of unit-specific training for APPs needs to be addressed. It also outlined the potential

benefits of developing a unit-specific HF program including its possible impact on 30-day readmission rates, and length of stay. Evidence has already shown the impact of the APPs educational training on retention (Flinter, 2012).

In the next section, the model, theoretical framework, and the review of literature that supports the relevance of HF specific program for APPs are discussed. The section includes also a discussion on educational preparation and clinical skills for the APPs and its relevance to nursing practice. Other topics include the definition of specific terminologies, role of the DNP student, and the role of the HF team in the project.

## Section 2: Background and Context

### **Introduction**

The goal of this project was to develop a training program due to the lack of training for APPs in treating HF and the inadequacy of the hospital-wide training for APPs. The following practice-focused question was identified: Does unit-specific training for HF improve knowledge and skills for APPs in HF management more than the current state of training?

In this section, the JHNEBP model and Malcolm Knowles's Adult Learning Theory (KALT) are discussed in detail. The JHNEBP model is used to create a systematic review of the literature providing evidence to support the training, while KALT is used to create a framework to build training relevant to APPs as adult learners. Other relevant topics explored in this section include nursing practices, nurse backgrounds, the role of the DNP student, and the role of the project team. The use of a multidisciplinary team creates a strong team because of the member's diverse medical backgrounds and varying perspectives (Gheorghide et al., 2013).

### **Concepts, Models and Theories**

#### **Johns Hopkins Nursing Evidence-Based Practice Model**

Scientific evidence was becoming an important tool in medicine in the late 1970s. The epidemiologist John Cochrane (1972) was critical of administering treatment without evidence. Over the next 40 years, evidence-based medicine slowly became integrated into medical practice in place of expert's opinion. Sackett, Rosenberg, Gray, Haynes, and Richardson (1996) stressed that evidence-based practice should be further integrated into

three important components: the best available evidence, clinical expertise, and patient's values or preferences. In an important book by Sandra Dearholt and Deborah Dang (2007) the John's Hopkins Nursing Evidence Based Practice Model was first outlined.

The JHNEBP model is a systematic process designed to formulate practice questions, appraise research and non-research evidence, and make recommendations based on the best available evidence (Dearholt & Dang, 2012). The JHNEBP model has 18 steps summarized into three main parts: practice question, evidence, and translation (see Appendix B). Each part is interconnected and drives from one step to the next.

The JHNEBP model was used in this project to provide insight into the practice issue. Data initially informing the practice issue came from anecdotal reports. Had data collection continued, a more formal needs assessment would also have been used. The JHNEBP includes a PICO tool (see Appendix A). This tool helped to clarify the nature of the practice issue from available data for this project.

The second phase of the JHNEBP process is gathering evidence. This includes search, appraisal, and synthesis of evidence from relevant research databases. Based on the results, recommendations for practice changes are taken from the best existing evidence. With the help of a research librarian, I performed a systematic literature search. I appraised the research articles and categorized them according to their level of evidence and then synthesized them into actionable insight.

The third phase of the process, translation, is where the evidence-based team determines if the changes to practice are feasible and appropriate based on the workplace setting. If so, the team creates and implements an action plan, evaluates the changes, and

communicates the results to appropriate individuals in the organization. In this project, I summarized and proposed an action plan appropriate to the HF unit.

My rationale for using the JHNEBP model is that it is a comprehensive approach to developing a healthcare project that embodies using research evidence to improve outcomes. The first step is to identify the problem and develop the “practice-focused question”. This purpose of the development of this question is to refine the problem until it can be answered directly with research literature. The next step is to search for the research that is related to the practice-focus question. Typically, this is done with a research database (CINAHL, PubMed, or Cochrane Library). The articles obtained are then rated, explained and appraised (synthesized) so that a story emerges about what is known about the practice-focus question. If the published research evidence supports change and improvement, it can then be translated into practice through a process of planning changes, implementation of the changes and evaluation of those changes. Results can then be disseminated to stakeholders and are often published and circulated.

### **Knowles’s Adult Learning Theory (KALT)**

My rationale for using KALT was that it is directly related to teaching adults. It recommends that educators of adult learners use six core adult learning principles essential to effective learning. Understanding and applying adult learning theory in the learning environment produces more effective educators and engaged learners.

The first principle Knowles outlined is called the “learner’s need to know.” Adults need to know why they are learning and why it is important to learn (Knowles,



1980). In this project, the APPs were asked what they want to know through a learning assessment. This is critical component in designing an optimal training program.

The second KALT component, “self-concept of the learner,” refers to how adults develop their self-concepts of being responsible for their decisions and for their lives. Once developed, they are then capable of self-direction (Knowles, 1980). In this project, the learners would be viewed as accountable for their own learning by providing them with access to resources. To accomplish the workplace task requirements, APPs learning would be at their own pace and on their available time.

The third KALT component is the “prior experience of the learner,” acknowledging learners’ different motivations, needs, experiences and goals (Knowles, 1980). This emphasizes adult education as based on individualization of teaching and learning strategies, with an emphasis on experimental techniques. Adults learn through group discussion, simulation, problem solving, case methods, and laboratory methods (Knowles, 1980). The learner’s current experience emphasizes the learner’s previous experience (Knowles, 1980).

The fourth KALT component, “readiness to learn,” describes the state of learning that is affected by an adult’s perception of how the subject matter relates to their social and professional development (Knowles, 1980). In this project, learners were prepared step-by-step for what they are about to learn so that the APPs would not be set up for failure.

The fifth KALT component, “orientation to learning,” encourages training to be problem-centered rather than content-oriented. In this project, orientation to learning

would be addressed by providing the APPs work related problems to aid in learning the material in HF. They learn what matters in the workplace situations, and practically leads to more effective learning.

Finally, “motivation to learn,” discusses the motivation to learn as being more internally focused than externally focused. The most potent motivators are within each person (Knowles, 1980), for example, increased job satisfaction and self-esteem. In this project the APPs are provided with lifelong learning concepts, increasing job satisfaction and morale by equipping them with the right strategies.

KALT was selected because it is culturally sensitive and appropriate for APPs to focus on being flexible, self-directed, and lifelong learners. KALT also helps to better understand APPs and their clinical experiences, preferences, learning styles, and behaviors. The theory can guide the APPs in exploring their learning needs and developing the unit-specific educational program. KALT can help navigate both adult learners and educators in their respective expectations. Knowles, Holton, and Swanson (1998, 2015) recommended that core principles offer guidance from theory to practice.

### **Definitions of Terms**

The following terms are defined to provide clearer and deeper understanding of this project.

*Advanced practice providers (APPs):* APPs are non-physician healthcare practitioners who are either a physician assistants or an advanced practice registered nurses (APRN), which includes a nurse practitioner, nurse midwife, nurse anesthetist and nurse specialist (Advanced Practice Providers Executives, 2018). They are healthcare

providers who deliver high quality care and are indispensable solutions to reduce healthcare costs (McCorkle et al., 2012).

*Advanced practice registered nurse:* Advanced practice registered nurses (RNs) based on APRN Joint Dialogue Group (2008) are registered nurses who have finished an accredited graduate-level education program in one of the four advanced practice registered nurse roles: clinical nurse specialist, nurse midwife, NP, or registered nurse anesthetist. He or she has passed a national certification examination, is licensed to practice and participates in continuous education courses offered by the national certification agencies. They achieve masters and doctoral degrees depending on the individual program.

*Cardiac nurses:* Cardiac nurses are registered nurses who have acquired cardiac training either in telemetry or critical care areas. This role can be an introductory role for NPs who specialize in cardiology (Nursing Explorer, 2018).

*Doctor in nursing practice (DNP):* A terminal professional nursing practice degree, built from a baccalaureate to advanced generalist master's in nursing. This prepares nurses in evidence-based practice, quality improvement, and system leadership or specialized practice in a variety of nursing practice roles. The doctoral program is focused on practice that relies on innovative and evidence-based resources using the highest level of research findings. The Eight Essentials of Doctoral Education for Advanced Nursing Practice provides the competencies for all nurses practicing at this level (American Association of Colleges of Nursing, 2006, p. 6-8).

*Hospital length of stay:* It is the total number of nights a patient stayed in the hospital for care. (CMS, 2012).

*Nurse practitioners (NPs):* NPs are RNs who have completed a master's or doctoral program in an accredited institution. They are licensed and independent to practice in variety of disciplines including ambulatory, acute, or long-term care under the state's rules and regulations. They have full range to provide comprehensive healthcare services, including assessing, ordering, and interpreting diagnostic tests, making diagnoses; providing counseling and education; managing treatment plans; and meeting the requirements expected by the American Association of Nurse Practitioners (2015a).

*Physician Assistants (PAs):* PAs are medical professionals who graduated from an accredited PA program. They can enter into this role with either an undergraduate or graduate degree, which is accelerated to a master's degree upon completion the PA program. They are certified nationally and licensed by the state and can practice under the supervision of a physician (Gonzalez et al., 2015).

*Quality improvement:* A team approach driven by data to improve practice within a healthcare system and apply processes with the goal to improve healthcare outcomes (Baily, Bottrell, Lynn, & Jennings, 2006).

*Unit-Specific Training:* In this study, I defined unit-specific training as purposeful, mandatory training with outcome measures relevant to the needs of the APPs in the HF unit. However, this concept can be applied to the needs of any unit. Unit-specific training is different from general hospital-wide training in that it focused on unit level needs at a given point in time rather than hospital-wide needs for a broad

audience of APPs. It also considers adult learning needs using Knowles's theory in comparison to the house wide training. These unit-level needs can be simple procedures or more general educational needs, but they are always tied to direct and immediate improvement in patients cared for in the unit specified.

*30-day readmissions:* Based on CMS, readmission of patients with HF within 30 days of discharge from the initial admission to the same hospital, or another applicable acute care hospital (CMS, 2012).

### **Relevance to Nursing Practice**

There is an ongoing need for adequate educational preparation and clinical skills for the APPs. According to U.S. Department of Health and Human Services (2010) education for the NP has traditionally been focused on the provision of primary care. Approximately 36% of NPs reported primary care as their main practice, 8.6% specialize in cardiac care, and 6.9% focus on chronic care. It is important for NPs to be viewed as competent (efficient, cost-effective, and safe) clinicians to compete in today's healthcare market; however, formal education alone does not prepare new nurse practitioners to practice completely. It requires educational training that fits the APPs specific needs of the workplace (Hart & Macnee, 2007).

### **APPs Training in Cardiology**

To appreciate the relevance of APPs training in cardiology, one must understand the general evolution of the cardiac NP role. Beginning in the early 1960s, the coronary care unit emerged as a new clinical nursing specialty. This became the forerunner of the modern inpatient NP in cardiac care. Nurses were trained to recognize cardiac

arrhythmias, administer intravenous medications, and defibrillate patients with ventricular fibrillation (Hamric, Spross, & Hanson, 2009).

In the mid-1960s, the first NP program was designed by Loretta Ford, a nurse and Henry Silver, a physician at the University of Colorado (Keeling, 2009; American Association of Nurse Practitioners, 2015c). The first NP curriculum was designed to focus on patient health in a community setting. At that time, family health, disease prevention, and health promotion were considered sufficient training for NPs.

In the 1970s, NPs were officially accepted by the Committee to Study Extended Roles for Nurses under the Health, Education, and Welfare Unit. The report supported role expansion for the nurse, which included medical data collection and clinical decision making in primary, acute, and long-term care. They suggested the standardization of nursing licensure, national certifications and development of a nursing model (Hamric et al., 2009).

By the 1980s, the American Nurses Association approved and recognized the role of advanced practice nurse (APNs) in the healthcare system. The concept of advanced nursing practice was initiated and used in the research literature. The APN specialty in nursing was established, consisting of emergency, neonatal and family NP roles. As the role expanded, a credentialing process was established to validate the nurse practitioner profession (Hamric et al., 2009).

In 1992, the American Nurse Association published a position statement on APNs, recommending that nurses in advanced clinical practice acquire advanced certification credentials through a graduate degree in nursing, and pass a state board

examination (Cronenwett, 1995). The rationale stems from expectations to perform comprehensive health assessments, demonstrate a high level of autonomy, and to possess expert skill in diagnosing and treating complex patients.

In the late 1990s, NP utilization in the hospital setting increased. Adult acute care emerged in response to the residency shortage in ICUs (National Panel for Acute Care Nurse Practitioner Competencies, 2004). APNs responded quickly to the lack of coordinated care being provided in the complex tertiary care system. The number of adult acute care master's programs rose in the U.S. and certification examinations were given in 1995 by the American Nurses Credentialing Center (Kleinpell, 1997). APNs have been increasingly well utilized in the inpatient setting due to residency hour constraints and hospitalists' shortage, thus, standardizing the expansion of NPs' roles in the hospital setting. Daly (2002) reported that adult acute NPs' role in adult acute care was recognized and employed in different specialties in the hospital system including cardiology, cardiovascular surgery, neurosurgery, emergency, trauma, internal medicine, and radiology services.

With the advent of the Affordable Care Act in 2011 it became apparent that NPs will be further mobilized. This included a strong recommendation that nurses pursue a doctoral degree in nursing. In this regard, the DNP degree was designated to improve practice in the healthcare setting. The initiative was to ensure standardization of practice at the entry level for APNs by 2015 and rolled over by 2020.

### **APPs Current Hospital Setting**

Advanced practice nurses must go through a credentialing and privileging check conducted by the hospital prior to employment to ensure patient safety and CMS regulatory compliance (Kamajian, Mitchell, & Fruth, 1999; Klein, 2008). The American Nurses Credentialing Center provides a certification specialty for HF nurses and NPs. However, the expectations in the HF unit are complex, requiring acute management of HF, including balancing fluid volume and diuresis. The field of cardiology is rapidly evolving, requiring constant training in current practice and new technology. Retraining cardiac NPs in the university is too slow to accommodate the changing cardiology workplace. Therefore, educational training should take place at the hospital level, the most efficient and applicable setting for HF APPs.

Currently, gaps have been identified in the educational preparation and clinical skills of APPs in the hospital setting despite the presence of hospital credentialing. Understanding gaps in practice requires discussion of specific roles of APPs at the bedside. Generally, if a family nurse practitioner is hired in the hospital setting, they will practice on the medical-surgical floor for a few years before choosing a specialty such as telemetry or critical care. In order to become a cardiac NP, family nurse practitioner candidates study an elective option for specialization during their final year in the master's program. He or she must declare a cardiac specialization; undergo a cardiac clinical practicum, and be supervised by either a cardiologist or a cardiac NP. Although the role of the cardiac NP has expanded, they are continually asked to perform new tasks, essential skills, and demonstrate the knowledge necessary for optimal care. Increased



scope of practice and advancement in technology make constant training a necessity as an APP's career progresses.

Though an acute care nurse practitioner may receive advanced training while working in a hospital (e.g. 12-lead ECG interpretation, chest X-ray interpretation, hemodynamic monitoring) there are still specialized skills that are left unaddressed (Kleinpell, Hravnak, Werner, & Guzman, 2006).

As the role of NPs expands, it is evident that essential skills and knowledge learned cannot support the dynamic clinical practice. Cardiologists working with APPs may be unsatisfied due to the lack of current NP training, leading to frustration among all parties. Novice NPs can become an adjunct to provide educational advancement, clinical skills and training. Professional advancement builds practitioners' confidence, provides a satisfactory experience, and engagement in the new role, and decreases turnover (McComiskey et al., 2017).

With the recommendation of the Institute of Medicine in 2011, reports focused on the future of nursing as a profession leading changes in the healthcare system and advancing the nation's health. To lead changes, the Institute of Medicine expressed the importance of nurses achieving higher levels of education and training. NPs should engage in continuous learning.

Overall, APPs with different backgrounds and levels of cardiac experiences, unit-specific HF training is critical to meet the needs of the APPs. As an outcome measure, APPs would be able to provide high-quality care, which is safe, efficient, and

timely. This outcome should also meet the standards of the organization to provide excellent care.

### **Local Background and Context**

I identified a lack of unit-specific training among APPs as an issue in an Acute Midwest Medical Center, through anecdotal reports from the manager, cardiology fellows and attending cardiologists. NPs in this unit had a prior cardiology nursing background and specialty training. Some NPs had 3-7 years of experience as nurses in telemetry unit and critical care units; intensive care unit, the cardiac care unit, cardiac catheterization lab.

In order to meet the quality metrics of the hospital organization and other governmental bodies, APPs required more unit-specific HF training. This is specifically on acute and chronic management of patients with HF including outcome measures to reduce lengths of stay and readmissions. Given the data regarding HF readmissions and length of stay in an APP managed HF unit compared to a non-APP managed HF unit, there was still more opportunity for APPs to become more effective care providers.

The organization strategic plan from 2010 to 2020 is to deliver personalized exceptional care of the highest quality, including development and assimilation of scientifically driven knowledge. The hospital organization's quality plan in 2014 focused on one of the strategic goals of delivering superior care. One of the criteria of exceptional care means zero preventable severe adverse events.

My doctoral project indirectly involved several aspects at the state and federal level. Increasing healthcare providers' awareness of these regulations decreases financial

penalties from the healthcare organization. This will meet quality metrics imposed by the CMS for reimbursement and penalties incurred by the hospital.

### **Current Research on the State of Nursing Practice in Cardiology**

This doctoral project will advance nursing practice by increasing APPs knowledge and skills in HF in support of providing a safe environment to care for the HF patient population. Zapatka et al. (2014) conducted a qualitative study with seven NPs participating in the primary care adult practitioner fellowship program. This funded study was designed to bridge the educational and clinical gap among new NPs and to form a team-based interprofessional primary care model in the VA healthcare system. The NP experience revealed four common themes of the positive impact of a post-master's adult NP program: (1) they created a bridge between education and professional practice building new NPs' confidence and competence; (2) the experience increased awareness of health professional roles: new NPs' role vis-à-vis other disciplines; (3) the new NPs' continued commitment to work as a team; and (4) the necessity of mentorship is crucial to new graduates.

Flinter (2012) conducted a multi-site, federally funded study of new nurse practitioners in 2007, which involves a one- year-residency program. The residency program is designed for family nurse practitioners planned to practice in the primary care setting. The author outlined the significance of having a nurse practitioner residency program, the importance of NP residency programs, and the recruitment and selection of NP residents. This action plan was considered to be relevant and timely based on the Institute of Medicine (2011) platform.

In a similar vein, my doctoral project will advance nursing practice by increasing the NPs knowledge and skills, providing a safe environment to care for the HF patient population. This project will potentially increase APPs engagement and decrease turnover rates. It would over time decrease length of stay and 30-day hospital readmission rates.

### **The Role of the DNP Student**

In 2006, the American Association of Colleges of Nursing disseminated the Essentials of Doctoral Education for Advanced Nursing Practice. The eight DNP Essentials served as a requirement and guide for all graduates. DNP essentials include system issues in complex practice, or process to improve quality care, outcomes and decrease healthcare costs.

The DNP is the pinnacle of academic excellence in the nursing field. The degree requires the student to be educated and prepared through experience to meet the healthcare needs of the population they serve. As part of the program, the student conducts a scholarly project in their area of specialization. This project demonstrates the synthesis of knowledge acquired during the doctoral academic experience in that area of specialization.

The DNP degree prepares the student to utilize research and implement evidence-based clinical practice in the healthcare delivery system. Translating evidence into practice is essential to developing a HF training program. This program will potentially provide high quality care, improved outcome measures, and decrease healthcare-related expenses, such as length of stay and 30-day readmission.

In this project, my roles included those of practitioner, leader, educator and a change agent. The doctoral project is an integral part of the progression in the program with the goal of gaining expertise in improving nursing practice (Brown & Crabtree, 2013). During my DNP practicum, I identified issues in knowledge and practice. In addition, I received a vast array of clinical experiences in cardiology as a nurse and as a nurse practitioner. I have been a cardiovascular nurse for 32 years and a cardiac NP for eight years. My experiences in the medical, surgical and critical care units (ICU and CCU) have added value to my DNP Project. My cardiovascular critical care experiences as a nurse at various hospitals afforded me with the expertise to develop a unit-specific HF program.

In having witnessed various clinical practices that needed improvement, HF was selected as an opportunity to undergo a process improvement because of its magnitude, aging population and high cost of care. The unit-specific HF educational program was selected because it affects both the population and the hospital organization. By knowing the best evidence available in research through the DNP program, practitioners can progress to finding other gaps between their research and practice to reconcile. Translating the discovery of new knowledge, application, and integration of this new knowledge in practice are part of DNP Essential III (American Association of Colleges of Nursing, 2006).

Creating the HF program is possible through my variety of experiences and expertise. Such expertise in cardiology in both inpatient and outpatient settings provides the background training needed. As a nurse in the Echocardiographic Lab, I have strong

firsthand understanding of the training. Echo lab offers noninvasive cardiac procedures for cardiac patients with HF and other non-HF indications. As a nurse, I have worked with cardiac experts, cardiology attending physicians, cardiology fellows, cardiac sonographers and exercise physiologists. My experience with them has provided ample cardiac clinical expertise to support my DNP role as a practitioner.

During my practicum, I endured rigorous cardiac exposure in different cardiology subspecialty settings: cardiac and nuclear testing, interventional cardiology, and electrophysiology. The cardiology fellows and the attending cardiologists encouraged and supported the HF program for APPs in different capacities, providing additional motivation. Because cardiology fellows work directly with APPs, they have firsthand knowledge of the APPs' training needs; their ongoing observation of the APPs was that they need training different from the current method used at the hospital. This input from the cardiologists further supports the hypothesis that APPs need a specialized model of training to provide optimal care. The openness and willingness of the cardiology fellows to assist in the APPs unit-specific HF program encouraged the DNP project. My preceptor and mentor assisted in identifying the educational needs and were willing to support the HF training program.

Brown and Crabtree (2013) delineated that the DNP degree was designed to improve practice expertise and increase the translation of evidence into practice. My preparation, which included an assessment of the current practice, an appraisal of evidence, development of outcome measures, and the use of new knowledge to develop strategies for practice improvement, has optimized my learning and expertise in nursing.

The dissemination of results through quality improvement is an important practice as a scholar and nurse leader. A DNP as a leader and as a scholar of practice reconciles best evidence and current clinical practice to improve healthcare and optimize patient outcomes (Papllham, & Austin-Ketch, 2015). I had a significant leadership role in the proposal. I identified issues relevant to nursing practice, found evidence, used various theoretical frameworks, and engaged with stakeholders at the unit and organizational level. My DNP project is essential to the inpatient cardiology hospital setting. It is timely and current in response to the needs of the APPs in the organization, as well as at a national level. My role as DNP student is to redesign and improve the healthcare system to meet the anticipated demands of healthcare reform, while also identifying actions that would improve the quality of patient care, and manage costs (Institute of Medicine, 2010).

Furthermore, as a prepared DNP, the development of leadership skills is paramount. Battie (2013) suggest leadership skills as a required component of nursing in order to fully contribute to healthcare redesign. Nurses must also collaborate with other providers to identify needs and problems, aspects for improvement, and implement changes for the patient's safety. These are both delineated in the DNP Essentials.

As an educator, I develop a program and provide appropriate instructional methodology based on the APPs preferences. The application of Knowles' theory of learning guided me as an educator of adults. This was central to the development of the unit-specific HF training.

As a DNP student, the expectation is to lead change through translation of research into practice. The goal of DNPs in general is to transform the healthcare system into a safe, cost-effective, and timely place for Americans (Institute of Medicine, 2011). The DNP student's goal is to be a scholar of change in the cardiac community embedded in the doctoral project.

One bias in this project originated from the use of anecdotal reports in identifying the educational needs of APPs. Using anecdotal reports was unavoidable due to site restrictions on data collection. To address this bias, organizational data confirming delays in the HF treatment process would have been collected to address the need for educational training in HF. Anecdotal reports refers to interviews, informal conversation, and onsite observation during practicum as part of the evidence providing insight into the specific clinical situation. However, it is well known that anecdotal evidence has limited validity (Oermann & Hays, 2011, p. 52). A quality improvement project is driven by data, which is essential as a starting point.

### **Role of the Project Team**

A team was assembled to collect data for this DNP project. The key roles on the team consisted of: the DNP student, nurse manager, cardiologist, and selected cardiology fellows. The project team is integral in developing unit-specific training for APPs.

In addition, a research librarian was utilized to find the best available research literature as this person is an expert in evidence-based process. With the librarian's help, I was able to ensure the use of appropriate and sufficient evidence while identifying different strategies for the literature search throughout the literature review process.



It was necessary to learn about the chain of command at the practicum site, especially when part of a large-scale organization. I needed to inform them of the goal of the practicum and give clear objectives of the project. Powrie, Danly, Corbett, Purath, and Dupler (2014) posited that to improve an evidence-based project is to provide adequate and appropriate resources and clarify roles. Learning the culture, the organizational structure, and layers of the managerial system involved in the journey of the DNP proposal is an essential step.

The cardiologist, a mentor for cardiology fellows, echo cardiologist and a preceptor for my DNP practicum, provided support and advice with unit-specific HF training consistent with the needs of the APPs. The cardiologist's clinical expertise and specialty in echocardiography and complex and advanced HF brought additional knowledge in HF training development.

The cardiology fellows are trained to be cardiologists who work directly with APPs. The fellows will assist on relevant topics for lecture discussion. These fellows are learning along with APPs in the HF Telemetry Unit. As a result, they are insightful resources to identify and confirm needs while providing additional learning support and decision-making in managing HF. They know the struggles of the APPs in learning the HF materials. The fellow's contribution is therefore invaluable.

The manager of the APPs was a physician assistant. Her experiences contributed to the HF program. This person was integral to knowing the program's effectiveness with APPs based on their schedule. More importantly, she will be the one to approve the program.

The timeline and responsibilities of team members are described in the JHNEBP Project Management Guide (see Appendix C).

### **Summary**

Section 2 restated the practice focused questions, reinforced the identified knowledge gap, examined and integrated the theoretical frameworks to understand more about the APPs role to facilitate the development of effective training in HF.

This section also discussed the project team's roles and how the team supported the creation of unit-specific HF training tailored to the learning needs of those APPs. Improving practice at the bedside required an adult learning theory and a nursing model integrated into the unit-specific HF training for APPs. Both would facilitate the collection and analysis of evidence, requisite to successful implementation of the program.

### Section 3: Collection and Analysis of Evidence

#### **Introduction**

The quality of care for HF patients in U.S. hospitals is both complex and challenging. Because of this, APPs need proficiency training to improve care. A lack of unit-specific training among APPs in the workplace was identified in this DNP project. The main purpose of this project was to increase knowledge and skills of APPs in a HF unit. This would deliver effective patient care superior to the current state of training, improve employee engagement, decrease burnout, and possibly reduce length of stay and HF patient readmission. Section 2 included the JHNEBP model and KALT. The JHNEBP model was used to navigate the DNP project due to its focus as a problem-solving approach informing nurses on how to obtain the best available evidence and provide structure for the best project outcomes. KALT provides concepts on how adult learners learn best, thus it was chosen for APPs to meet their learning needs. KALT tells us that adult learner's need multiple methods of learning. With that in mind, the ideal way to meet APPs learning needs is by providing them with different avenues of learning such as online training, or webinar programs.

Section 3 reiterates the practice-focused questions, sources of evidence, and analysis and synthesis.

#### **Practice-focused Questions**

During my DNP practicum at an acute medical center in a cardiac telemetry unit, I identified a lack of unit-specific training as an issue in the unit among APPs. Care for complex and advanced HF patients require extensive and ongoing training for APPs.

Anecdotal reports from APPs, managers, cardiology fellows, and cardiologists revealed the need to improve knowledge and skills, particularly in HF. Additionally, APPs at this location verbalized the need for more training in 12-lead EKG interpretation, radiography, and cardiac imaging. One NP also noted that APPs are required to understand the complex hemodynamics of HF without prior teaching. With that in mind, the practice-focused question was:

Does HF unit-specific training for APPs improve knowledge and skills in diagnosing and managing acute HF better than the current state of training?

### **Sources of Evidence**

If this project was implemented, data would have been obtained from APPs prior to and during the training. This data would have included: organizational data to support the training program, a focus group on workplace training preferences, a pretest for knowledge gaps in HF, a posttest for knowledge acquisition, and a final survey of the educational training. The need for the training would have been empirically demonstrated by organizational data on delays in the HF management process and corroborated with the anecdotal reports.

A focus group discussion would have been used to capture preferences for learning. The goal of these focus groups would have been to evaluate APP's opinions about how they prefer to learn, their challenges to learning at work, their habits regarding training, their preferences for online versus in person instruction and evaluation both before and after they experience the training.

A HF knowledge pretest consisting of off-the-shelf test questions would have been given to evaluate APPs specific HF training needs prior to training. A posttest would evaluate acquisition of knowledge from training and serve as a surrogate test for the training quality. The training categories on both pre and posttest (e.g., 12-lead EKG interpretation, cardiac imaging for stress testing, and acute management of HF) would have been taken from recommendations from the onsite cardiologist and guidelines for the HF APPs.

The above pretest and posttest data would have answered the practice-focused question, “Does HF unit-specific training for APPs improve knowledge and skills in HF management better than the current state of training?” The pretest would have served as a measure of the hospital-wide training system and the HF knowledge deficits in each of the APPs. The posttest would have measured knowledge acquisition from the educational training (off-the-shelf modules). Furthermore, the posttest would have demonstrated whether unit-specific training is an improvement over the current state of training. The final survey would have served as an engagement check on the mode of training.

### **Review of Literature**

A review of the literature included topics relevant to supporting the purpose of developing unit-specific HF training. Important discussions in the literature review included heart failure, the scope of practice of NPs and PAs and how they are trained, the significance of advancing knowledge using different strategies, and the utilization and impact of APPs. These topics are relevant to support the purpose of the project, which was developing a unit-specific HF training for APPs.

The literature search was systematic and comprehensive, using multiple databases to provide a wide range of article collection to support the topics of interest and address the practice-focused question. It was completed with the guidance of a research librarian, an expert in library science and conducting literature reviews. Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, and Cochrane were the databases used. When searching for relevant articles the following filters were used: articles were written in English, peer-reviewed journals, human subjects within the United States, and published within the past 5 years unless they were related and significant. Terms and keywords used for search headings to capture all the evidence in the top databases were: *nurse practitioners*, *advanced practice nurses*, *physician assistants*, *midlevel providers*, *physician extenders* and *advanced practice providers*, *residency program*, *postgraduate*, and *mentorship*. Boolean search language was used where appropriate (Munchel, Seal, & Wissenger, 2012 p. 77).

The initial search using CINAHL for *nurse practitioners* resulted in 12,801 articles; *advanced practice nurses* resulted in 3,955 articles; *physician assistants* 3,094 articles; *advanced practice providers* produced 29 articles; *nurse practitioners HF*, *readmission*, and *LOS* showed 17 articles; using *PA's HF*, *readmission*, and *LOS* resulted to 0 articles; and the use of *advanced practice providers*, *HF*, *LOS*, and *readmissions* showed 0 articles.

PubMed resulted in 14 articles, using the following medical subject heading (MESH) terms: *nurse practitioners*, *advanced practice nurses*, *physician assistants*,

*midlevel providers, physician extenders and advanced practice providers, residency program, fellowship, post graduate, mentorship, HF, LOS, and 30-day readmission.*

The general literature review discusses heart failure epidemiology, physiology of HF, comorbidity and risks factors, the role of APPs in HF, the scope of practice of NPs and PAs, APPs utilization outcome, and discussion of 30-day readmission and length of stay.

### **General Literature Review**

**The Epidemiology, etiology and complexity of heart failure.** HF is the most common cause of admissions and readmissions in the Medicare program (Joynt & Jha, 2011). Because of this, it important to reduce the health care costs. In 2018, HF prevalence is over 6.5 million in the United States and over 23 million globally while its prevalence is generally increasing (Benjamin et al., 2018). Comorbid factors predicted both the incidence and severity of HF (Anh, Tamara & Gregg, 2011) and its incidence is expected to rise by 46% between 2012 and 2030 (Heidenreich et al., 2013).

Approximately 75% of HF patients present with previous hypertension. Approximately 50% of people diagnosed with HF will die within five years (Roger et al., 2004; Murphy, Xu, & Kochanek, 2013).

HF is a complex clinical syndrome resulting from structural or functional abnormalities of the heart that cause left ventricular impairment (Lindenfeld et al., 2010; Yancy et al., 2013). This impairment causes the filling and emptying of particularly the left ventricle to be diminished to a point where the perfusion demands of the body are not met. The etiology of left ventricular impairment can be ascribed to a variety of disorders

of the pericardium, myocardium, endocardium, heart valves, or great vessels, or from metabolic abnormalities. However, typical presentation symptomology for HF is, shortness of breath, activity intolerance, congestion, edema, and easy fatigability; symptoms that can have multiple etiologies (Yancy et al., 2013). HF is a progressive disease that has distinct diagnostic stages, and a variety of differential diagnosis. Proper evaluation, diagnosis and treatment are therefore often complex.

HF is a progressive disease that impairs cardiac function, causes circulatory congestion and changes in the size and shape of the myocardium of the heart (Ramani, Uber & Mehra, 2010). The heart's compensatory strategy ultimately causes progression to heart failure and cardiomyopathy. These are the progressive conditions that cause what is known as "left ventricular remodeling" (Konstam, Kramer, Patel, Maron, & Udelson, 2011). Early detection based on signs and symptoms is often crucial to treatment and mortality.

The proper evaluation of HF is complex and has a variety of steps. It should begin with a complete history and physical. The history and physical evaluates the family history of heart disease and involves assessing the blood pressure, edema and heart sounds. It is important to determine the other comorbid factors influencing the potential diagnosis of HF including a history of hypertension, coronary heart disease, atrial fibrillation, and obstructive pulmonary disease as well as ischemic heart disease, hypertension, smoking, obesity, and diabetes, among others (Yancy et al., 2017). Recent guidelines pointed out important comorbidities associated with HF, including anemia, hypertension and sleep-disordered breathing (Yancy et al., 2017).



History and physical is followed by diagnostic tests to further evaluate severity, acuity and etiology of HF. Tests such as the 2D echocardiograph is commonly the preferred diagnostic tool to assess the left ventricular ejection fraction (LVEF), LV size, wall thickness, and valve function (Konstam et al., 2011). APPs should understand other important cardiac imaging tools and hemodynamic monitoring to diagnose HF, including 12-lead electrocardiogram (ECG), chest x-ray, cardiac MRI (Yancy et al., 2013).

The role of APPs caring for HF patients is widespread. The key strategies are understanding the pathophysiology of HF, asking the right questions during history taking, performing accurate physical examinations, ordering and understanding the right diagnostic cardiac imaging, and monitoring tools. Bowers (2013) discussed that APPs, should have knowledge of treatment guidelines, biomarkers, treatment per stages of HF, guideline-directed medical therapy, scoring systems to predict outcomes in HF, and nonpharmacological management of HF. Moreover, Bowers (2013) encouraged NPs to be cognizant of the latest research improving current and future practice in the management of HF, such as administration of diuretic therapy for patients who are decompensating.

**Scope of practice of NPs and PAs in HF.** At the acute medical center, NPs and PAs worked together to manage acute HF patients in the HF telemetry unit. To understand the nature of the scope of practice between these APPs, it is useful to note their differences and similarities in terms of their scope of practice and certification.

NPs are advanced practice RNs who have earned a master's or doctoral degree or are post-master's certified. Their educational preparation includes special knowledge and

clinical competency that allows them to practice in different healthcare settings. They are licensed independent practitioners who can assess, diagnose, treat, and manage diseases in ambulatory, acute, or chronic diseases without a physician's supervision. In addition, NPs deliver both nursing and medical services to individuals, families, and groups (American Association of Nurse Practitioners, 2015b). NPs' educational programs meet the accrediting body's requirements and competency-based education to confirm they are prepared to provide safe, high-quality patient care after graduation.

The NP candidates met a minimum of 500 direct patient care clinical hours in the preparation of the NP role and population-focused area of practice. Recertification of NPs must be completed every five years to practice, with 150 hours of continuing education units (CEUs; American Association of Nurse Practitioners, 2015b). Cardiology is considered an elective specialty, and clinical hours within cardiology vary.

In contrast, PAs are licensed and master's-prepared medical professionals who work under the supervision of a physician. The primary care focus is in ambulatory clinics, physician's offices, and acute/long-term care facilities. Their learning is patterned on medical models that assess, diagnose, treat and manage patients. PA programs are master's prepared degrees; but their undergraduate education can be varied, unlike nursing programs in which candidates may have master's degrees but must have a bachelor's degree in nursing (American Association of Physician Assistants, 2015). PAs may be bachelor degree graduates with different backgrounds in healthcare experience engaged in direct patient care of 1,000-4,000 hours as prerequisites. Upon completion of the program, PAs earn master's degrees. PA students obtain certification by completing a

minimum of 2,000 or more clinical rotation hours in addition to passing the Physician Assistant National Certifying exam, the certifying body of PAs.

Moreover, PAs are intended to be generalists. Residency programs are offered to PAs including but not limited to cardiothoracic surgery, oncology, orthopedics, emergency medicine, and OB-GYN. The programs take about one to two years to complete but it is noncompulsory. The recertification exam takes place every 10 years with 100 hours of continuing medical education (CME) every two years (American Association of Physician Assistants, 2015).

Appraising the education and scope of practice of NPs and PAs provides clarity, as their education and training may be different yet their roles in the healthcare system are comparable. Both professions were developed due to physician shortages beginning in the mid-1960s. There are significant differences that occur between the two types of healthcare providers. The most noticeable variance of which is clinical practice hours required for certification. Notably, NPs are required fewer clinical hours for their certifications due in part to prior healthcare experiences as registered nurses before pursuing their advanced degree, an aspect many PAs lack. The Emergency Medicine Practice Committee (2012) recognized the limitations of new APPs because of their clinical practice experience and education. As a result, continuous supervision, education, and adequate orientation and training of newly hired NPs and PAs are essential.

**The significance of advancing knowledge.** Reports from the Institute of Medicine's 2010 outlined the future of nursing that nurses should practice to the full extent of their education and training, achieve higher levels of education and training, and

be full partners with physicians and other health care professionals in restructuring the U.S. health care system. NPs who become acute care nurse practitioners (ACNPs) need to advance their knowledge due to the increased demands and changing environment in terms of the roles in which they ultimately partake. Haut and Madden (2015) emphasized when NPs are part of unit-based team ACNP should be offered orientation program, including internship; preceptorship and mentorship to improve roles in demonstrating NPs' skills set; thus, increasing satisfaction for both employee and employer.

Currently, training in acute care is conducted in professional organizations (APRN Joint Dialogue Group Report, 2008). Hospitals provide checks (credentialing and privileging), but these checks are not specific to the needs of the HF unit. HF units require training tailored to the immediate needs of the population it serves. For example, nonsystematic training of APPs, including shadowing, may not be enough to thoroughly train an APP. Having unit-specific training is relevant, current and fast because it addresses the needs of the APPs at the unit level as they arise.

A comprehensive review of the literature has shown little information addressing the need for unit-specific HF training among APPs. However, a need for mentorship, preceptorship, and postgraduate or fellowship programs for advanced practice providers have been identified (Furfari et al., 2014; Harris, 2014; Hill, & Sawatzky, 2011; Zapatka et al., 2014).

A few research articles address the issues of mentorship and postgraduate training of ACNPs. For example, Doerksen (2010) explored mentorship needs and potential benefits of a mentorship program for ACNPs. In a survey of fourteen advanced practice

nurses, professional development or mentorship needs to bridge the gap between education and practice. This included conducting research, quality improvement, medical ethics training, and project management skills.

Participants also stated that informal mentorship had been practiced in the past; however, a formal mentorship program is helpful based on the individual needs of the ACNPs. The results of this study inspired advanced practice nurse to develop an orientation manual for new nurse practitioners (Doerksen, 2010).

Furfari et al. (2014) conducted a 12-month quality improvement project at the University of Colorado academic hospital to build NP competence in the inpatient setting. This hospital had high patient volumes and used NPs in a variety of ways with a diversity of job descriptions. The goal of this project was to provide NPs the non-clinical training necessary for success in their jobs by implementing a standardized training program. The training included nonclinical aspects of hospital medicine that an NP would not have received in their academic program. This included quality improvement, process enhancement and resource use, the foundations of building medical knowledge, communication skill and professional development.

A post-graduation survey showed that all NPs initially felt unprepared to care for hospitalized patients. After the fellowship program, 80% felt “prepared”, while 20% felt “very prepared”. Using a knowledge assessment test given before and after the fellowship program, baseline mean knowledge increased from 57% to 79% post program. At the end of fellowship program, six of the eight graduated NPs chose a job in an inpatient setting.

Potential stumbling blocks for a fellowship program are organizational funding and department commitment. Despite these constraints, the University of Colorado academic hospital fellowship program proved to be a significant contribution to developing the knowledge base of NPs needed at the hospital. This training sfurther developed NPs into leaders in a hospital system in which NP roles are rapidly changing (Furfari et al., 2014).

Another study that addressed the training needs of NPs was conducted by Thabault et al. (2015), who used a cohort study design to develop a pilot residency partnership program to assist newly graduated NPs transitioning to practice in the retail clinic setting. The objectives were to reduce NP turnover and to promote academic excellence. Seven newly graduated NPs participated in the 12-month program to expand their clinical and business skills. The residency program used various educational technologies, including case conferences, webinars, and online doctoral-level academic coursework. Results from this program showed that both NPs and preceptors were highly satisfied, and the turnover was zero for six months upon completion of the program (Thabault et al., 2015).

Zapatka et al. (2014) conducted a qualitative study with seven NPs participating in the primary care adult practitioner fellowship program. This study was designed to bridge the educational and clinical gap among new nurse practitioners and to form a team-based interprofessional primary care model in the VA healthcare system. The NPs experience revealed four common themes demonstrating the positive impact of a post-master's adult NP program: (1) a bridge between education and professional practice,

which builds new nurse practitioners confidence and competence; (2) increased awareness of health professional roles as: new nurse practitioners versus other disciplines; (3) developed new nurse practitioners' commitment to work as a team; and (4) the necessity of mentorship. New nurse practitioners' access to NPs, physicians as preceptors and support proved invaluable.

The majority of studies found the overall impact of providing educational support to new nurse practitioners or NPs can be beneficial to practitioners and patients alike. Unfortunately, there is not enough literature to support cardiology units with specific instructions in the inpatient setting, thus further justifying the need to conduct the proposed unit-specific HF educational program to support the APPs. From these studies, one can conclude the relevance and importance of HF unit-specific training that meets the needs of the APPs at the unit level because the unit level training is fast, timely, and relevant to the APPs' educational needs.

**Utilization and outcomes of NPs and PAs.** David, Britting, and Dalton (2015) conducted a study to determine the impact on the utilization outcomes of NPs on medical teams. A retrospective two-group comparative design was used to evaluate the outcomes of 185 patients with ST- or non-ST segment elevation myocardial infarction, or HF who were confined to a cardiovascular intensive care unit in an urban medical center. Results showed the course of hospitalization was approximately 50% less when receiving care from a medical team with an NP as opposed to a medical team without an NP. Thirty-day hospital readmission was significantly lower in the intervention group than the control group. The authors provided additional information on the contribution of cardiac acute

care nurse practitioners to a medical team caring for cardiac patients with myocardial infarction or HF was found to have a positive impact on 30-day readmissions both in the emergency unit and inpatient setting.

A study by Kahn, et al. (2015) evaluated the impact of APPs on surgical residents' critical care experience. Among the residents surveyed, 48% reported APPs producing positive effects, while 21% reported no effects, and 31% reported detrimental effects. Given this data, the residents generally did not care for the APPs' contribution. Despite this conclusion, the project has the potential to strengthen APPs training, provide safe care, and enhance patient experience.

Edkins, Cairns, and Hultman (2014) conducted a systematic review to evaluate the role and cost of the APPs in the intensive care setting at the University of North Carolina Hospital in a burn intensive care unit. Results found that APPs in critical care settings function with and without residents. These providers reported to either intensivists or an attending physician. Patient outcomes remained similar or improved with APPs involvement. More importantly, utilizing APPs provided considerable cost savings due to decreased length of stay, decreased ventilator days, and fewer urinary tract infections with nurse practitioners included in the healthcare team (Edkins et al., 2014).

### **Archival and Operational Data**

The length of stay and 30-day readmission data from the Department of Quality Outcomes of the organization was originally thought to be a support to develop HF training for APPs; however, further analysis found to be irrelevant as the data does not address the practice questions specifically to serve as a benchmark.



To add information to my project, I needed to know the most common diagnosis admitted in the HF telemetry unit. To obtain data, I sent a letter to the manager of the Quality Outcomes department, who approved the release of data. I discovered that HF was the most common among the three cardiac diseases. These data address the practice questions specifically to show that HF is the common admission diagnosis in HF Unit.

The data from the organization is considered to be highly reliable based on electronic medical records. Therefore, all information is accurate and current. The data obtained for the quality improvement project includes the following:

Table 1.

*Top Three Discharge Diagnoses in October and November 2014 APP-Managed Telemetry Unit*

Diagnosis Category	Patient Count	Percent
Heart Failure	65	41%
Heart Arrhythmias	59	37 %
Acute Myocardial Infarction	34	22 %
Total	158	100 %

### **Evidence Generated for the Doctoral Project**

**Participants.** The participants would have represented a purposive non-random sample of ten APPs actively working in HF failure telemetry unit. The APPs' at the study site were NPs and PAs. In future studies, the actual number of the APPs in these roles will determine the sample size during the time of the study.

**Procedures.** The goal of the first focus group would have been to explore and discuss the APPs preferred learning methods. A pretest and posttest would follow. The

pretest is conducted to assess the knowledge base of the APPs on the targeted topics. This would have been conducted online, at a set break time, for one hour without disruption in a private room with a proctor.

The content focus areas of the unit-specific educational program would have then been determined and implemented based on the results of the pretest. At the end of the training session, an online opinion survey of the program would have been conducted to evaluate the desirability of the program.

According to Knowles, the focus group interview method is suitable because it draws from the clinical experiences of the APPs, gaining insight as to how APPs prefer to learn. It also engages them in the planning and evaluation of their training. A focus group interview guide would have been created. The aim of the focus group is to ensure that APPs input are incorporated as adult learners. Results of the focus group will be used to design the unit-specific HF training for APPs.

The questions on the pre and posttests would have come from off-the-shelf training and would have been used with the intent to evaluate the knowledge of the APPs before and after the intervention. A randomized controlled trial is considered the highest level of evidence. However, Grove, Burns, and Gray (2013, p. 231) said that the one group pre and post design provides a substitute for examining causality in circumstances that experimental control is unfavorable. Harris et al. (2006) added that evaluating the effectiveness of the intervention is an important alternate option. This holds true in this location and population for study as only ten APPs would have served as the population in this location. Terry (2012, p. 71) described this research design that evaluates the

outcome of interest before and after intervention. Knowledge assessment is evaluated through the pretest and posttest results. The test would have also been evaluated on how the participants applied the information.

The intervention would have been the unit-specific HF program based on the learning needs of the APPs. A post focus group would have assessed opinions of the HF program. Four weeks would have been dedicated to online learning methods and program evaluations will take place during week 12.

The competencies would have included 25 different case-based 12-lead ECG interpretations and exposure to different cardiac imaging modalities. This would have provided the knowledge and skills to manage patients efficiently and safely.

Faculty would have been recruited through conversation regarding their availability, interest in supporting our APPs to advance their knowledge, and willingness to lecture for 30 minutes. The program would have provided alternate learning resources to accommodate other preferred learning styles. A topic related to their subspecialty would have been provided in a letter and an educational stipend will be given as gratitude for their time and effort. Their slideshow presentation will be evaluated for applicability and validity.

There would have been several ways to limit errors to validity and reliability to the tools used in this project. For validity, several sources of evidence, including content, response process, relationships to other variables, and consequences would be used (Sullivan, 2011).

**Protections.** Participants will be informed that information will be kept confidential during the quality improvement process. An institutional review board (IRB) approval number (12-18-17-0418198) was obtained from Walden University (December 18, 2017). A letter of approval was also secured from the healthcare organization to ensure that data is obtained at the local site, with permission.

### **Analysis and Synthesis**

Due to unavoidable circumstances, implementation of the project has not yet occurred. However, collection of data would have been tracked on a computer with anonymous participants corresponding identification. I would monitor the process to ensure timely return of information. Because of the sensitive nature of the information confidentiality of the data is crucial.

Ensuring data is recorded with minimal human error and assuring the reliability of the evidence is essential to accurate data analysis. One example of this is the use of video to obtain data from the participants during focus group sessions. Descriptive statistics would have been used to analyze all numeric data, including mean, median, mode, frequency, range, standard deviation and percentages where indicated.

Thematic analysis would have been used for the focus group data (Braun & Clarke, 2006). This method will be utilized to elicit emerging themes, processes and patterns. De Chesnay (2015) recommended step-by-step data analysis for focus groups outlined by Braun and Clarke (2006) to assist novice researchers. They recommend examining and organizing data according to themes and related research questions. Then, producing a final report for final analysis.

To analyze and interpret scores of APPs knowledge on trained topics, a paired  $t$  test would have been used to determine the change between pre and post testing. The dependent samples  $t$  test (paired  $t$  test) is a statistical test for comparing groups (Polit, 2010, p.405). The significant concern here is to determine the average difference in knowledge of APPs before and after intervention, which is to test the difference between two dependent groups.

### **Summary**

Section 3 focused on sources of evidence in relation to focused-questions, the literature review that supports the purpose and the development of the APPs role in subspecialty programs in the hospital setting, and the hospitalist cardiac role. The significance of advancing knowledge was emphasized. The literature review included the epidemiology of HF within the United States as well as its economic impact. This section also discussed participants, data collection procedures, protection of participants, and analysis and synthesis of data while noting the implementation of the program did not yet occur.

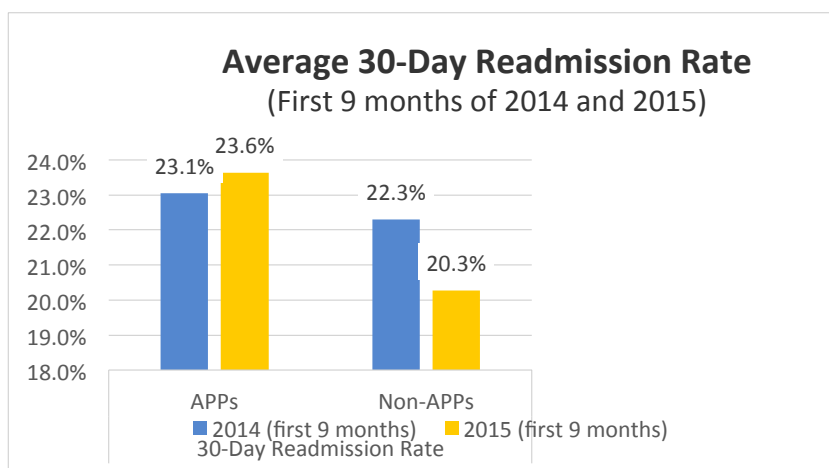
## Section 4: Findings and Recommendations

### Introduction

A lack of unit-specific training was identified as an issue among APPs in a telemetry unit in a large hospital. The purpose of the project was to increase the knowledge and skills of APPs in the unit through the development a HF training program. The goal of the program was to improve nursing employee engagement, decrease turnover, and to potentially contribute to reducing the length of stay and 30-day readmission rates in the unit.

### Findings and Implications

To lend support for the unit-specific training, using the available 2014 and 2015 data, the average 30-day readmission rates for care administered by APPs and Non-APPs were compared. An independent samples *t*-test showed that the means between APPs and Non-APPs were non-significant ( $p=0.095$ ). The 30-day readmission rates for patients from the APP managed group were not statistically different from that of the non-APP managed group.



*Figure 1. Average 30-day readmission.*

As shown above, the 2014 APP managed 30-day readmission rate was 23.1% and it was comparable to the non-APP managed 30-day readmission of 22.3%. The 30-day readmission rate was statistically non-significant for 2015 data as well, 23.6 % and 20.3 %. However, when compared to the national data for 30-day readmission rates in HF units, there is more room to improve.

### **Implications**

Length of stay and 30-day readmission of HF are multifactorial composite variables (Gheorghiade et al., 2013). Therefore, analyzing the impact of training on both outcome variables without a more advanced study design and larger sample would be severely limited. Since thorough evaluation of the effect of unit-specific training on length of stay and 30-day readmission rates are outside the scope of this study, speculation on its impact is omitted.

If successful, this educational program could be implemented in other areas of the hospital. This training could serve as a model for orientation of cardiac APPs across the institution for both inpatient and outpatient settings. A unit-specific HF Program for APPs could potentially lower length of stay and 30-day readmission across the system if adopted.

### **Recommendations**

Unit-specific rather than hospital-wide training of APPs in HF is an important consideration due to the complexity of HF. Helping APPs to recognize worsening HF early can help APPs order diagnostic tests and laboratory workups in a timely manner.

Early detection of HF has the potential to decrease length of stay and reduce hospital readmission rates for HF patients over time. Unit-specific HF training also has the potential to increase patient compliance rates.

There are things that a future APP could do to save time and produce more comprehensive results when implementing this study proposal. A randomized, multi-site study with a control group would be preferred as a testing strategy. Focus groups are often time consuming. A faster method for collecting opinions and facts than a focus group is a questionnaire. If used, the questionnaire should be tailored to the specific learning needs of the APPs. A questionnaire can also be used to obtain baseline data.

### **Strength and Limitations of the Project**

Proper implementation of this project has the potential strengths of addressing the lack of unit-specific training of the APPs to manage HF in the healthcare organization and compliance to HF guidelines, decreasing APP turnover rates, while increasing APPs' self-confidence and morale.

The most significant limitation of the project is that it has not yet been implemented. A barrier in implementing the project was the limited time period as the contract between the academic center and the organization had expired limiting the implementation phase in the acute center.

However, if the project would have been implemented, it could present the additional following limitations: (a) timeliness of data collection and interpretation may be difficult; (b) group discussions can be difficult to coordinate; (c) time can be lost for unrelated topics during focus group discussion; (d) the study has a relatively small



sample size; and (e) the study is a single-hospital setting. The multi-site study would be more generalizable.

Because implementation of the program did not occur, evaluation of the program is not possible. However, a future advanced nurse may conduct data collection and analysis who is interested in HF educational training. This unit-specific training program of APPs can be applied also in cardiothoracic surgery unit.

### Section 5: Dissemination Plan

The plan for dissemination included the presentation of the results on program development to the hospital organization, whose members include nurses, APPs, administrative staff, and cardiologists. Another possibility for a venue to present this project is through a yearly evidence-based practice research symposium at the hospital. Here, findings and results can be discussed through a poster or a slide show presentation. The symposium is generally well attended with diverse nursing participants including APPs, clinical nurses, and nursing students within the hospital. Additionally, there is an all-day shared leadership meeting once a month that includes the chief nursing executive, Nursing Professional Practice Committee, and invasive and noninvasive cardiology. I would also discuss the project with the academy in charge of the hospital-wide nursing education, because the academy encourages innovation in educational program that will benefit nursing. It is also helpful to disseminate quality outcomes of the project in the Journal for Nurse Practitioners, or the Journal for Nursing Education to inform the public and to contribute to the world of nursing education.

### **Analysis of Self**

Although I have been a nurse for 30 years, there is still much to learn in a complex healthcare environment. This DNP project reinforced the idea that nursing is a lifelong learning practice.

As an advanced nurse practitioner in cardiology, I am now equipped with advanced professional education and leadership skills to lead change in the unit and organization, and diffused innovations to change practice. I learned to apply relevant

steps to address nursing issues at the bedside using evidence-based practice. Improving practice at the bedside is one of the goals in our unit. As a DNP, I have learned to utilize a review of the literature to provide the best available evidence to support a project.

As a scholar, I developed thorough knowledge of the quality improvement process. I was able to identify the importance of baseline data as a benchmark to improve nursing practice and patient quality outcomes. In the future, I will be more conscious of the need to use data in a project.

As a nurse leader, I will be cognizant of working collaboratively with other members of the team. To understand how each team member's contribution benefits the project is key to success. Also, it is relevant to update fellow members on the results of the project and how to disseminate the reports. In the future, my goal also is to motivate other nurses to engage in nursing advancement. At work, I am a preceptor for a nurse who is working on her master's in nursing.

### **Summary**

If this project was to be implemented, dissemination of the results in a journal would be critical to contributing to the world of nursing education. In addition, discussion of findings through slideshow presentation is essential to the organization in contributing to improving nursing practice and outcomes. A project, supported by six of the eight DNP Essentials, is considered rigorous and powerful. The project provides significant influence to me in a variety of roles, including as leader, scholar, educator, and change agent in the healthcare setting. Advancing knowledge of APPs in HF is of critical importance in the field of nursing.

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## Appendix A: Johns Hopkins Nursing Evidence-Based Practice Question Development

## Tool

<b>1. What is the problem and why is it important?</b>	
The APPs lacked unit-specific training.	
<b>2. What is the current practice?</b>	
Currently, APPs shadowing, attend cardiology fellow's noon conference, Monday conference and grand rounds. No HF specific training for APPs.	
<b>3. What is the focus of the problem?</b>	
<input type="checkbox"/> Clinical                      X Educational <input type="checkbox"/> Administrative	
<b>4. How was the problem identified? (Check all that apply)</b>	
<input type="checkbox"/> Safety/risk management concerns X Quality concerns (efficiency, effectiveness, timeliness, equity, patient-centeredness) X Unsatisfactory patient, staff, or organizational outcomes <input type="checkbox"/> Variations in practice within the setting	<input type="checkbox"/> Variations in practice compared with external organizations <input type="checkbox"/> Evidence validation for current practice <input type="checkbox"/> Financial concerns
<b>5. What is the scope of the problem?</b>	
<input type="checkbox"/> Individual <input type="checkbox"/> Population                      X Institution/system	
<b>6. What are the PICO components?</b>	
<p><b>P</b> – (Patient, population, problem): Advanced Practice Providers</p> <p><b>I</b> – (Intervention): Systematic Workplace-Based HF Program for APPs</p> <p><b>C</b> – (Comparison with other interventions, if applicable):</p> <p><b>O</b> – (Outcomes that include metrics for evaluating results): Decreased average length of stay and 30-day readmission</p>	



<b>7. Initial EBP question:</b>	
Does improving APPs knowledge and skills in diagnosing and managing HF patients decrease length of stay and 30 day readmission	
<b>8. List possible search terms, databases to search, and search strategies:</b>	
Nurse practitioners, physician assistants, HF, cardiology program, cardiology training, residency program	
<b>9. What evidence must be gathered? (Check all that apply)</b>	
<input checked="" type="checkbox"/> Literature search <input type="checkbox"/> Standards (regulatory, professional, community) <input checked="" type="checkbox"/> Guidelines <input checked="" type="checkbox"/> Expert opinion	<input type="checkbox"/> Patient/family preferences <input checked="" type="checkbox"/> Clinical expertise <input checked="" type="checkbox"/> Organizational data

## Appendix B: Johns Hopkins Nursing Evidence-Based Practice Model 18 Steps

### **Practice Question**

Step 1: Recruit interpersonal team

Step 2: Develop and refined the EBP question

Step 3: Define the scope of the EBP question and identify stakeholders

The EBP question was defined and stakeholders were identified and outlined through PICO

Step 4: Determine responsibilities for project leadership

Step 5: Schedule team meetings

### **Evidence**

Step 6: Conduct internal and external searches for evidence

Step 7: Appraise the level and quality of each piece of evidence

Step 8: Summarize the individual evidence

Step 9: Synthesize overall strength and quality of evidence.

Step 10: Develop recommendations for change based on evidence synthesis

1. Strong, compelling evidence, consistent results
2. Good evidence, consistent results
3. Good evidence conflicting results
4. Insufficient or absent evidence

### **Translation**

Step 11: Determine fit, feasibility, and appropriateness of recommendations for translation path

Step 12: Create action plan

Step 13: Secure support and resources to implement action plan

Step 14: Implement action plan

Step 15: Evaluate outcomes

Step 16: Report outcomes to stakeholders

Step 17: Identify next steps

Step 18: Disseminate findings

Appendix C: Johns Hopkins Nursing Evidence-Based Practice Project Management  
Guide

<b>Initial EBP Question:</b> Does unit-specific training in HF for APPs improve knowledge and skills in diagnosing and managing acute HF better than the current state of training?						
<b>EBP Team Leader(s): M. C., M. M., Dr. P. J.</b>						
<b>EBP Team Members: Cardiology Fellows</b>						
<b>Activities</b>	<b>Start Date</b>	<b>Days Required</b>	<b>End Date</b>	<b>Person Assigned</b>	<b>Milestone</b>	<b>Comment/Resources Required</b>
<b>PRACTICE QUESTIONS:</b>						
<b>Step 1:</b> Recruit interprofessional team	Jan 2015			MC		
<b>Step 2:</b> Develop and refine the EBP question	Dec 2015			M. C, J.P		
<b>Step 3:</b> Define the scope, EBP question and identify stakeholders	Dec 2015			M. C J. P.		
<b>Step 4:</b> Determine responsibility for project leadership	Dec 2015			M. C		
<b>Step 5:</b> Schedule team meetings	Dec 2015			M.C.		
<b>EVIDENCE:</b>						
<b>Step 6:</b> Conduct internal and external search for evidence	Dec 8, 2015			M.C		
<b>Step 7:</b> Appraise the level and quality of each piece of evidence	Dec 8, 2015			M. C.		
<b>Step 8:</b> Summarize the individual evidence	Dec 13, 2015			M.C.		
<b>Step 9:</b> Synthesize overall strength and quality of evidence	Dec 13, 2015			M. C		
<b>Step 10:</b> Develop recommendations for changes	Pending approval from Walden			M. C.		
<b>TRANSLATION:</b>						
<b>Step 11:</b> Determine fit, feasibility, and appropriateness of recommendation for translation Pathway	Pending					
<b>Step 12:</b> Create action plan	Pending					

<b>Step 13:</b> Secure support and resources to implement action plan						
<b>Step 14:</b> Implement action plan						
<b>Step 15:</b> Evaluate outcomes						
<b>Step 16:</b> Report outcomes to stakeholders						
<b>Step 17:</b> Identify the next steps						
<b>Step 18:</b> Disseminate findings						

## Appendix D: Unit-Specific Educational Training Program for APPs

### Creating a Unit-Specific Educational Program for APPs in the HF Unit

The duration of the program is 3 months. It is an online training, with instructional video. The APPs work a total of 40- hours per week. They are working 12-hour shifts per day, three days a week, and 8-hours to complete the recommended 80 work per pay period. There will be 4-hour protected time as their educational day and with full pay, as an incentive for being a lifelong learner. The first week will be dedicated to the introduction of the project. The 12<sup>th</sup> week will be used for evaluation.

Table D1

#### *Timeline of the Educational Program*

Section	Weeks	Notes
Introduction Letter (email)	1	
Conduct Focus group	2 and 3	
Pre test	3, 4, 5	
Online training includes Instructional Video PowerPoint Case-Based Training	6, 7, 8 & 9	
Post test	10, 11	
Final: Evaluation of the Program	12	

To inform APPs of the incoming training, an introduction letter will be e-mailed to all APPs who work in the HF Unit. After a week, a focus group will be conducted after all the consensus of the date and time to best accommodate all APPs.

In week four, pretest will start. APPs should have already signed in the time to take the pretest. The pretest is 20 questions and 20 EKGs to interpret to be completed in an hour online in the educational room with a proctor. After the pretest an online training program includes, instructional video, PowerPoint or case-based training.

Posttest will be implemented and a survey about final evaluation of the training. Recruitment and creation of faculty is initiated by personally speaking with a potential faculty regarding their availability, approval with interest in supporting our APPs to advance their knowledge, and willingness to lecture for 15-20 minutes through an instructional video. A topic related to their subspecialty will be provided in the letter and an educational stipend will be given as a gratitude for their time and effort.

**Goals:**

The main goals of the DNP Project will focus on the development of unit-specific cardiovascular educational program for APPs. The unit-specific educational training for APPs is to prepare APPs to increase their knowledge

**Program Objectives**

1. To provide an innovative and evidence-based educational training to APPs that will increase their knowledge through online learning of 12 lead EKG reading, learning cardiac imaging, such as, basic echocardiogram, nuclear studies, CT, cardiac MR, cardiac catheterization, and radiologic studies.

2. Recruitment and creation of a dedicated leadership cardiology faculty for APPs.

**Activities: Instructional Video**

1. To provide essential points that the presenter should include in the lecture for discussion: 12- Lead EKG interpretation, cardiac imaging modalities: echocardiogram and stress test, nuclear stress test, CT/MRI and radiologic studies.
2. To develop, incorporate and apply evidence-based practice guidelines of each topic

The program is three months long, which includes online learning with case studies. The APPs who participate in the program will be exposed to a variety of learning experiences to advance their knowledge as a cardiology practitioner.

The APPs have been practicing in a variety of settings with different general and cardiac experiences, skills, education, and backgrounds. The APPs are expected to participate actively as a learner and partner at their full extent in these learning endeavors. It is also highly expected to complete this training as the bases of their completion and demonstration of the competencies.

The unit-specific APPs HF training program schedule is 12 weeks (3 months) for 4 hours total protected time.

**Learning methodology**

The learning methodology will be based upon the APPs choices during the focus group discussion and their recommendations. The evidence-based methods will include online learning, lecture discussion through PowerPoint, case studies. The cardiology

services include Electrophysiology Lab (EP), Echocardiography Lab (Echo), Nuclear Lab, Cardiac Magnetic Resonance Imaging (MRI), Interventional cardiology and ECG Unit.

Recruitment and creation of dedicated program leadership faculty for APPs (Educational Content

Table D2

*Outline of Unit-Specific HF Training Content for a Month*

<b>Week 1</b>	<b>Week 2</b>	<b>Week 3</b>	<b>Week 4</b>
Instructional Video on EKG	Echo cardiogram TEE, Stress Test	Nuclear	Radiologic and Cardiac MRI/CT
EKG Training 25-50 EKGs to read	Transesophageal echocardiogram		

**Unit-Specific HF Training Content**

- 1: EKG Training: PowerPoint, instructional video and 20 case studies with EKG interpretation
2. When to order Echocardiogram: Echo with Doppler, Stress test and Dobutamine stress test?
3. When to order Nuclear Stress Test: Exercise stress test, nuclear stress test and vasodilator nuclear stress test?
4. When to order cardiac MRI?



Table D3

*Outline Current State Versus. Future State For APPs*

<b>Current State of Training</b>	<b>Future State of Training</b>
<b>General Training</b>	<b>Unit-Specific Training for APPs</b>
<p>APPs attend conference that are not aimed at APPs:</p> <ul style="list-style-type: none"> <li>• Cardiology Noon Conference</li> <li>• Monday Cardiology</li> <li>• APPs grand rounds)</li> </ul> <p>Shadowing (observe for a 2-4 hours in the Lab or Unit)</p> <p>Note: Even when topics are aimed at APPs, topics are for a hospital-wide general APPs audience. The training is non-mandatory.</p>	<p>Cardiac imaging and testing and monitoring tools in HF:</p> <ul style="list-style-type: none"> <li>• 12 Lead EKG interpretation</li> <li>• Cardiac imaging</li> <li>• Hemodynamic interpretation</li> </ul> <p>An Introduction to Heart Failure</p> <p>History: Asking the Right Questions</p> <p>Physical examination in Heart Failure</p> <p>Acute Management of Heart Failure</p> <ul style="list-style-type: none"> <li>• Admission</li> <li>• Inpatient</li> <li>• Discharge</li> </ul> <p>Purposeful Learning with specific objectives</p> <p>Note: The training is mandatory</p>

### Appendix E: Letter of Introduction for Training

I am a nurse within the Echocardiography Laboratory. My Doctor of Nursing Practice Project is focused on developing a Unit-Specific HF training program for Advanced Practice Providers (APPs).

As part of quality improvement, an educational training will be conducted. This involves a focus group to obtain your opinions and cardiac skill training with pretest and posttest. A 4-hour protected will be provided

Again, thank you for your time participating in this training.

Sincerely,

Merlyn Chua

#### Appendix F: Selected Focus Group Questions About Learning Preferences

1. What type of learning modality is your preference (online, webinar, or lecture discussion)?
2. What type of learning do you prefer (auditory, visual, learn by doing)?
3. What is the best time of day for the training?
4. What do you see as major challenges to training if we start right away?
5. What would increase your motivation to do this training? What gets you excited about training? (e.g., protected time, book, gift card for massage, and registration for future programs with CEUs)

## Appendix G: Unit-Specific HF Program Evaluation

Note: Your feedback is important for the continuous improvement of HF unit-specific educational program. Please take time to convey your learning experience.

1. After the unit-specific HF program, I am confident to read the 12-Lead EKG and provide appropriate management.
  - a) Yes
  - b) Somewhat
  - c) Not at all
  
2. I can order echo stress test and nuclear stress test correctly.
  - a) Yes
  - b) Somewhat
  - c) Not at all
  
3. As a result of the unit-specific training program, I would likely to share to others
  - a) Yes, I will
  - b) Probably, I will
  - c) Probably, I will not
  
4. As a result of the unit-specific program, I would like to reassure excellence in my daily practice.
  - a) Yes, I will
  - b) Probably, I will
  - c) Probably, I will not
  
5. Overall, tell us about your learning experience about the unit-specific training and how this can be improved.
  - a) Very Satisfied
  - b) Satisfied
  - c) Not satisfied

Comments and Suggestions

Thanks,  
Merlyn Chua