

DESCRIBING THE NEEDS OF ADVANCED PRACTICE REGISTERED NURSES  
(APRNs) WHO PLAN TO SPECIALIZE IN CARDIOLOGY

by

Allison Lee Stokes

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A DNP Project Submitted to the Faculty of the

COLLEGE OF NURSING

In Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF NURSING PRACTICE

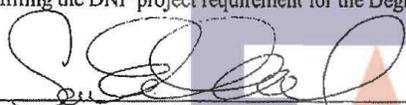
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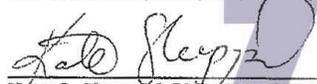
THE UNIVERSITY OF ARIZONA

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by *Allison Lee Stokes* entitled "*Describing the Needs of Advanced Practice Registered Nurses (APRNs) Who Plan to Specialize in Cardiology*" and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

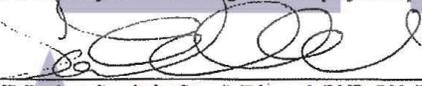
  
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Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

  
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## ACKNOWLEDGMENTS

I want to first thank my committee, Dr. Kate Sheppard, Dr. Kristie Flamm, and Dr. Sara Edmund, for their continued guidance throughout this process. This was a first for me and I would like to thank you for your energy, encouragement, and patience. Dr. Edmund, your joyful demeanor was a refuge when I could not see the light at the end of the tunnel. Thank you for respecting my timeline and reassuring me that you would be there to do whatever it took to keep things on track.

Thank you to my parents who have always been my number one fans. Your love and support have given me the strength and discipline to accomplish my dreams. You never let me give up and you never let me down. I love you a bushel and a peck.

To the many practitioners who have taken me under their wing: Dr. Mason Makdesi who taught me to simplify, not magnify; Dr. Amer Khan who taught me the importance of providing high quality care to every patient every time; Dr. Sam Alnajjar who went above and beyond to ensure that I would reach my educational goals; Heidi Brewer, AGACNP who gave me endless tips and tricks and taught me that it's perfectly okay to wear the pants, even if they are disguised as a skirt; Dr. Murli Raman whose immediate faith in me never wavered; The Mayo Clinic Hospital cardiac nurse practitioners for pushing me to recognize my strengths; Dr. Christen Waddell, FNP who taught me the rewards of being a thorough practitioner; Bill Schlicklin, ACNP who never told me to stop asking why, no matter how many times I did so; Dr. Rajeev Kathuria who helped bring me back to life and who never stops checking on me; And a special thank you to Dr. Patrick Quinn whose unfailing kindness and constant effort showed me what it truly means to be an exquisite practitioner of cardiology.

## DEDICATION

To all the past, present, and future cardiac advanced practice registered nurses

## TABLE OF CONTENTS

LIST OF FIGURES .....	9
ABSTRACT.....	10
<b>INTRODUCTION.....</b>	<b>12</b>
<b>Background and Significance .....</b>	<b>12</b>
<b>THEORETICAL FRAMEWORK .....</b>	<b>16</b>
<b>Description.....</b>	<b>16</b>
<b>Relationship to Study Aims.....</b>	<b>18</b>
<b>SYNTHESIS OF EVIDENCE .....</b>	<b>21</b>
<b>Commonalities.....</b>	<b>21</b>
<b>Education Gaps.....</b>	<b>22</b>
<b>No Official Standard.....</b>	<b>23</b>
<b>A Change is Required.....</b>	<b>23</b>
<b>Functional Independence Expected.....</b>	<b>25</b>
<b>Untapped Potential .....</b>	<b>25</b>
<b>Strengths .....</b>	<b>26</b>
<b>Weaknesses .....</b>	<b>28</b>
<b>Gaps.....</b>	<b>29</b>
<b>Limitations.....</b>	<b>29</b>
<b>Summary.....</b>	<b>30</b>
<b>METHODS .....</b>	<b>30</b>
<b>Project Design.....</b>	<b>31</b>
<b>Recruitment and Sample.....</b>	<b>31</b>
<b>Inclusion Criteria .....</b>	<b>31</b>
<b>Recruitment.....</b>	<b>31</b>
<b>Setting.....</b>	<b>32</b>
<b>Tools for Data Collection.....</b>	<b>32</b>
<b>Data Analysis.....</b>	<b>33</b>
<b>Ethical Dimensions of the Project .....</b>	<b>34</b>

TABLE OF CONTENTS – *Continued*

<b>Non-Maleficance</b> .....	34
<b>Beneficence</b> .....	35
<b>Justice and Autonomy</b> .....	35
<b>Trustworthiness</b> .....	35
<b>FINDINGS</b> .....	36
<b>Demographics</b> .....	36
<b>Commonalities</b> .....	37
<b>The Motivation of an APRN Specializing in Cardiology</b> .....	38
Degree programs.....	39
<b>Current Tools Utilized by APRNs Specializing in Cardiology</b> .....	39
Cardiac courses.....	39
Cardiac clinical rotations.....	39
<b>Needs Based on the Current Approach for APRNs Specializing in Cardiology</b> .....	40
Starting as an entry level APRN specializing in cardiology.....	40
<b>Team Based Care and New and Evolving Cardiac Techniques</b> .....	41
<b>Expert Cardiac Clinician as a Mentor</b> .....	41
<b>Continuing Education</b> .....	41
<b>What is Needed for APRNs to Specialize in Cardiology?</b> .....	42
<b>Mentorship for a Minimum of One Year</b> .....	42
<b>Confidence in Preparation</b> .....	42
<b>National Certification or Examination Requirement</b> .....	43
<b>DISCUSSION</b> .....	44
<b>Limited Educational Opportunities</b> .....	45
<b>Availability of Degree Programs</b> .....	45
<b>Lack of Cardiac Focus in Educational Preparation</b> .....	46
<b>Educational Gaps</b> .....	47
<b>The Need to Validate Knowledge of APRNs Specializing in Cardiology Knowledge</b> .....	50
<b>Trustworthiness</b> .....	51

TABLE OF CONTENTS – *Continued*

**Strengths** .....51

**Limitations** .....51

**Impact on Practice** .....52

**Dissemination** .....53

**CONCLUSION** .....53

APPENDIX A: RECRUITMENT SCRIPT.....55

APPENDIX B: STRUCTURED INTERVIEW QUESTIONS.....57

APPENDIX C: THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD  
APPROVAL LETTER.....60

APPENDIX D: T502A ICF CONSENT FORM .....62

REFERENCES .....66

LIST OF FIGURES

*FIGURE 1.* Social Cognitive Theory Model.....18

## ABSTRACT

**Background:** Cardiology is but one of the many clinical foci available to certified Advanced Practice Registered Nurses (APRNs). In fact, more acute care APRNs choose cardiology as their focus than any other. With such strong interest in cardiac advanced practice nursing, it is imperative to assess the adequacy of preparation for those who wish to follow this career path. Known barriers exist in the educational and clinical preparation of this APRN population, however, there is little research detailing the specifics of those barriers.

**Purpose:** This study describes the needs of APRNs who plan to specialize in cardiology.

**Method and Sampling:** A qualitative design was used to describe the motivation of APRNs specializing in cardiology, tools they currently utilize to achieve their specialization, and their needs based on the current approach. I recruited participants, APRNs specializing in cardiology, through meetings at a local cardiology practice. Seven APRNs specializing in cardiology with experience ranging from 10 months to 15 years, and currently working in a cardiac setting, participated in the study. Structured interviews were conducted to describe the needs of APRNs who plan to specialize in cardiology. The interviews were audiotaped and analyzed to reveal commonalities.

**Findings:** After analyzing the audio recordings three major commonalities emerged: APRNs specializing in cardiology must overcome limited educational opportunities, APRNs specializing in cardiology require a higher level of skill than their formal training and licensing requirements provide, and the need to validate APRNs specializing in cardiology knowledge. Additional commonalities included availability and the type of degree programs, and a lack of cardiac focus in educational preparation.

Conclusion: The findings showed the needs of APRNs who plan to specialize in cardiology are rooted in their educational preparation. There is a vast amount of variability among degree programs and a severe lack of cardiac focus in their educational preparation. In order to achieve competency, 100% of study participants secured a mentorship with an expert cardiac clinician for a minimum of one year post-graduation and without assistance from their educational programs. Additionally, APRNs specializing in cardiology believe a national certification or examination requirement would be beneficial to their practice.

## **INTRODUCTION**

In 1965, Loretta Ford developed the original Advanced Practice Registered Nurse (APRN) clinical training model. The system has served the profession well, educating over 222,000 nurse practitioners in the United States (US) (American Association of Nurse Practitioners [AANP], 2016). Cardiology is but one of the many clinical foci available to certified APRNs (AANP, 2016). In fact, more acute care APRNs choose cardiology as their focus than any other subspecialty (AANP, 2016). Of the 350 colleges and universities, which offer APRN programs, there are seven with a specific cardiovascular concentration (Duke University, 2017). With such strong interest in cardiac advanced practice nursing, it is imperative to assess the requirements for those who wish to follow this career path. Therefore, the purpose of this study is to describe the needs of APRNs who plan to specialize in cardiology. Study aims are: 1) to describe what is needed for APRNs to specialize in cardiology, 2) describe what tools are currently utilized to achieve specialization as an APRN specializing in cardiology, 3) describe the needs for individualized and team based care based on the current approach for APRNs specializing in cardiology, and 4) describe what is the motivation of an APRN who plans to specialize in cardiology?

### **Background and Significance**

Nurse practitioners have been valuable members of the healthcare team since 1965, utilizing their distinct nursing backgrounds and further education to help provide a wide range of professional responsibilities (Brush, Handberg, Biga, Birtcher, Bove, Casale, ... Wyman, 2015). Enhanced patient care and a greater access to that care are practice improvements that have evolved from the addition of APRNs (Roots and MacDonald, 2014). “The strength of nurse

practitioner clinical judgment may be attributed in part to the quality of education and training accessed in formative preparation before entering the workforce” (Carollo & Mason, 2016, p. e1). In fact, the American Association of Colleges of Nursing (AACN) (2016a) has been pursuing a change in the current level of preparation necessary for APRNs from the master’s degree to the doctorate level in order to ensure that APRN practice expertise continues to provide high quality patient outcomes. As of yet this pursuit does not include more than one graduate level course in the APRN core consensus model specific to subspecialties, such as cardiology. When students have the opportunity to obtain two specialty foci during graduate coursework, they may better be positioned to fulfill employer’s expectations (AACN, 2015a; AACN, 2016a; Carollo & Mason, 2016).

Currently, there are no formal set standards with which to measure the competency of a cardiac nurse practitioner (NP): “Competency at the specialty level will not be assessed or regulated by boards of nursing but rather by the professional organizations” (APRN Consensus Work Group and National Council of State Boards of Nursing APRN Advisory Committee, 2008). When met with inquiries about a plan to create a competency for APRNs specializing in cardiology, the AACN (2015b) cites an inability to universally agree upon a measurable achievement, as it changes with time, experience, and setting. Named as a requirement for all APRN education in the *Consensus Model for APRN Regulation* (2008), present curricula indicates that each APRN specializing in cardiology complete the same three core competencies as all other APRNs as included in the AACN *Essentials of Doctoral Education for Advanced Nursing Practice* (2006): 1) Advanced Health Physical Assessment, 2) Advanced Physiology/ Pathophysiology, and 3) Advanced Pharmacology. Additional training is dependent upon the

school, with the goal that the remainder be a common set of competencies applicable to any and all APRN types, to enable the student to access a wide range of jobs varying from providing care for prematurely born babies, from researching the effectiveness of alternative therapies, to tackling social and economic causes of health problems (AACN, 2015a; Dracup, 2017).

Having an established required number or type of experiences and procedures for a particular APRN specialty, as well as a required number of clinical hours in combination with satisfactory completion of coursework is not an undeveloped concept. The AACN utilizes these requirements for nurse midwifery, nurse anesthesia, and psych mental health APRN competencies (AACN, 2015a). The challenge of developing a specific curricula and competency for APRNs specializing in cardiology that meets national core competencies has become the subject of a national dialogue involving the American College of Cardiology, Duke University, the Mayo Clinic, and several other health institutions (Brush et al., 2015; Duke University, 2017; Mayo, 2016). This dialogue has consistently emphasized the notion that APRNs specializing in cardiology are a constituency that require a higher level of skill than their formal training and licensing requirements provide (Brush et al., 2015; Duke University, 2017; Mayo, 2016). Furthermore, the indication is that the most important part of their education is acquired on the job, post-graduation (Brush et al., 2015; Nurse Practitioner Schools, 2015). Tasked with providing safe, competent, cost effective care without a national curriculum or accreditation to guide them, APRNs specializing in cardiology are encouraged to seek a cardiac expert to guide them during their clinical residencies, leaving them to rely on their own resources to establish and monitor competency, and seek out extended clinical work on an independent basis (Foster, 2010; Dracup, 2017).

APRNs specializing in cardiology working in today's practice environment can be expected to participate in cardiac team based care and meet the challenges brought on by new and evolving cardiac techniques (Brush et al., 2015). Minimum recommendations are: 1) the mentorship of an expert clinician in a cardiovascular specialty, 2) clinical experiences that should prepare them to practice in both inpatient and outpatient cardiovascular settings, and 3) specialty courses that should provide the requisite knowledge and skill to demonstrate expertise in cardiovascular care (Duke, 2017).

Several APRNs specializing in cardiology complete more than minimum required 500 clinical residency hours, however, many novice APRNs may remain hesitant in their ability to meet the job responsibilities required of them (Flinter, 2005). APRNs new to practice may feel unprepared which may then create largely an employer responsibility to ensure full support and training of an employee who has been deemed competent and comes to them with an APRN certification. Margaret Flinter introduced nurse practitioner residencies in 2005 after noticing novice APRNs relying heavily on colleagues whose primary responsibility was not mentorship and who were not be interested in devoting intensive training to a newcomer (Flinter, 2005). Completing a nurse practitioner residency provides the hands on clinical training than many APRNs specializing in cardiology may be missing in their graduate degree programs (Flinter, 2005). An APRN residency program has been seen as a way to remove the pressure of on the job learning during the first year of practice, allowing APRNs specializing in cardiology to earn a stipend while remaining a student. It also reduces the employer burden to ensure their new hire can provide safe, competent care, facilitating a smooth transition from student to experienced APRN specializing in cardiology (Flinter, 2005).

APRNs are assuming an increasing role in providing care to cardiovascular patients, and they have become an essential part of the cardiovascular team (Scordo, Stanik-Hutt, Melander, Wyman, Madgic, & Rodgers, 2016). Outcomes of care provided by APRNs specializing in cardiology demonstrate their ability to provide high quality care with patient satisfaction scores similar and sometimes better than their physician colleagues (Scordo et al., 2016). As the APRN specializing in cardiology role continues to develop it may encourage more cardiologist practices to utilize APRNs on the continuum of care, which may dramatically increase the supply of healthcare professionals available (Dracup, 2017; Foster, 2010). Describing the needs of this APRN population may better prepare APRNs specializing in cardiology to function as licensed independent practitioners, providing cardiac healthcare services for complex acute, critical, and chronically ill adults at risk for urgent and emerging conditions (AACN, 2016a).

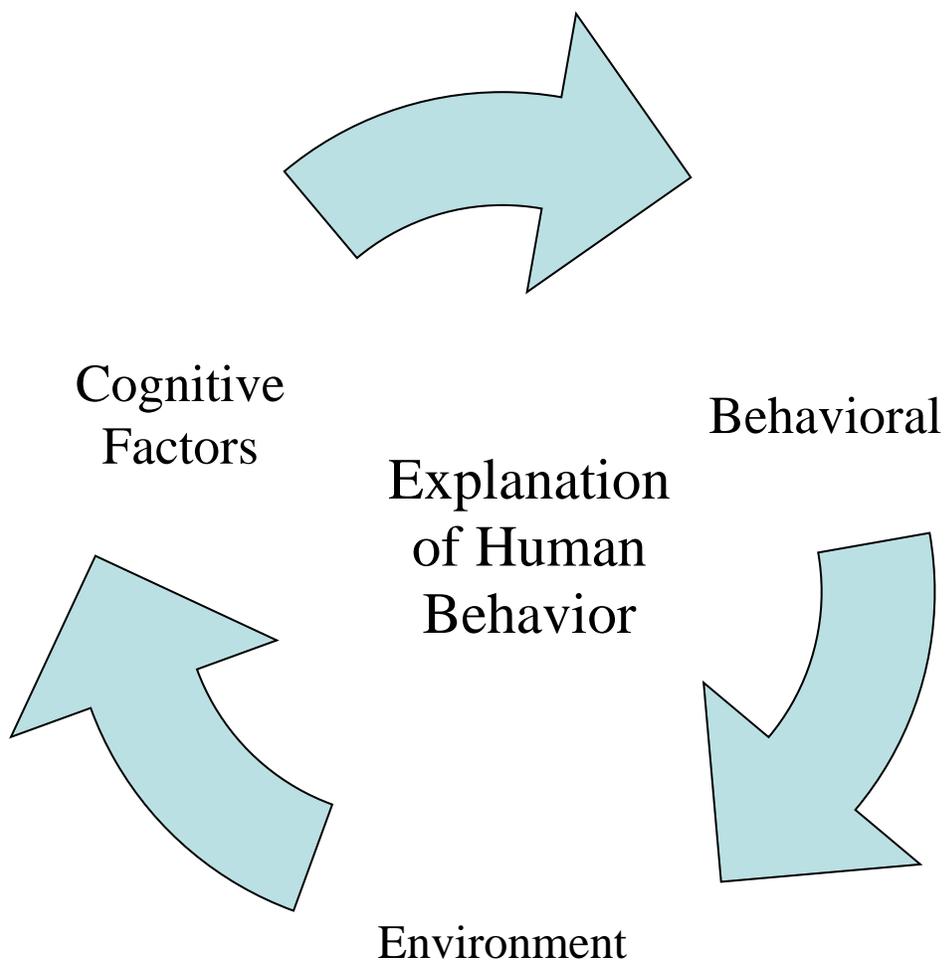
### **THEORETICAL FRAMEWORK**

Describing the needs of APRNs planning to specialize in cardiology is guided by Albert Bandura's Social Cognitive Theory (SCT) (Bandura, 1986). Understanding the learning needs of APRNs planning to specialize in cardiology may help identify the goals and reasonable expectations of the learning process. By understanding the expectation, there may be an increase in the chances of achieving a successful educational experience as demonstrated by professional competency (Peña, 2010; Russell, 2006). This exploration of the learning needs of APRNs is guided by SCT.

#### **Description**

SCT provides explanation of human behavior, specifically motivation and self-efficacy, which is largely based on observational learning (Bandura, 1986). Observational learning and

motivation can be further described using the three concepts of environmental, behavioral, and cognitive factors. Bandura (1986) posits these three components of the SCT have a relationship of reciprocity, meaning each concept has an impact on the other two concepts bi-directionally. For example, a learner's belief about their own capability can have an effect on success or failure, which then affects their behavior. Learners can then behave in a competent manner and trust in their knowledge, thereby further increasing their self-efficacy. By recognizing and applying the SCT to education and learning, one can understand how environment (i.e., the curriculum, the coursework objectives, the availability of appropriate courses to meet the needs of the learner) can have a direct reflection on self-efficacy (cognitive factors) and subsequently, behaviors (Bandura, 1986). In essence, human thoughts regulate human behaviors and environment. Figure 1 assists in the explanation of the Social Cognitive Theory Model.



*FIGURE 1.* Social Cognitive Theory Model

#### **Relationship to Study Aims**

The observational tenet of SCT speaks to the study aim of describing the tools currently utilized to achieve specialization as an APRN specializing in cardiology. This requires gaining the perspective from those already in that role. Narratives detailing their transformation from novice to expert may give APRNs planning to specialize in cardiology a realistic and meaningful view of the developmental process prior to exposure in clinical scenarios (Carraccio, Benson,

Nixon, & Derstine, 2008). The narratives may assist education leadership in identifying appropriate curriculum which may create an environment conducive to learning and self-efficacy development.

The cognition factor in the SCT describes how the learner's belief about his or her own capability can influence success or failure (Bandura, 1986). The intentional recruitment of planned proaction and aspiration act as the catalysts to a determinative course of action (Bandura, 2001). Sensory stimulation activates cognition and a learner's execution of a particular intention. "Human beings are sentient, purposive beings" (Bandura, 2001, p. 5). The purposeful pursuit of a desired outcome, as opposed to passive approach, demands a form of self-reflection surrounding obligations and fortitude to achieve success. The learner then utilizes beliefs about their own sense of adequacy and self-satisfaction with the results of their actions to drive them further towards a state of self-efficacy. Throughout this process of critical thinking, there arises a demand for the necessary information needed to create a change (Russell, 2006). Whether this change be in behavior, skills, or knowledge level, it serves to establish a greater level of engagement in the educational journey of an APRN specializing in cardiology, and the motivation to complete it.

The behavioral factor in Bandura's SCT involves the abilities of the learner to complete the task. The result of the behavior informs their personal beliefs surrounding their knowledge base and skill set to be successful (Bandura, 1986). As Bandura (1986) posits, self-efficacy is directly related to the outcome of behaviors. This deep approach to critical thinking is a necessity ingrained in new nurses, helping them to diagnose and formulate the learning needs of themselves as well as their patients (Casejo, 2012 Wilkinson, 2004). Understanding the prior

learning experience of an APRN planning to specialize in cardiology can help guide the behavioral transformation from novice to expert. Coupling this guided behavior with a high sense of perceived self-efficacy allows the learner to plot a firm course from concept to outcome, and providing a positive learning experience may nurture the self-direction and autonomy that is already present in this APRN population.

The environmental component of SCT includes the social context such as the setting, the tools for success, and the availability of appropriate learning resources to ensure success. Bandura and Wood (1989) describe the relationship of environment and self-efficacy as reciprocal to one another. A learner who believes in their ability to maintain control of their environment is at a much lower risk of experiencing self-doubt and the self-sabotage. A learning experience should consist of an environment of trust and clarification coupled with mutual expectations between teacher and student, fostering coordinated, cooperative learning circumstances (Russell, 2006). Occasionally there will be negative experiences in the learning environment, but both the student and the teacher need to remember this is what this time is for, to make mistakes and learn from them, and not to let them undermine any sense of competence (Wilkinson, 2004).

The goal of the learning experience for an APRN planning to specialize in cardiology is to transform the student into an independent, competent, self-confident provider. Imparting appropriate instruction based on needs may create an environment for success. Many APRNs who plan to specialize in cardiology are limited in their cardiac preparation and can be expected to have an educational acuity at entry level. Hence, a learning environment focused on needs of this population may help prepare them and allow them to become familiar with the theory behind

practice (Wilkinson, 2004). SCT helps to clarify how competency in critical thinking and decision making describes the needs for individualized and team based care for APRNs specializing in cardiology based on the current competency centered outcome approach that is now the focus of provider education (Carraccio et al., 2008).

### **SYNTHESIS OF EVIDENCE**

A review of literature was conducted to address the question, “What are the needs of advanced practice registered nurses who plan to specialize in cardiology?” Electronic databases including Medline, EMBASE, CINAHL, PubMed, were searched with terms such as cardiac nurse practitioner, nurse practitioner competency, nurse practitioner residency, cardiac nurse practitioner education, and cardiac nurse practitioner role. Literature was included if it was in English language, within the last 10 years, and investigated at least one contextual or individual factor impacting APRN education, training, or post-graduate expectations of. A number (28) of pieces of literature met the inclusion criteria.

#### **Commonalities**

Reviewing the literature uncovered five reoccurring commonalities: APRNs specializing in cardiology require a higher level of skill than their formal training and licensing requirements provide, APRNs specializing in cardiology must rely on their own resources to establish and monitor competency as there are no cardiac specific set standards at this time, current education for APRNs specializing in cardiology requires a change, the current APRN curriculum expects functional independence as a cardiac practitioner without providing education or training to do so, and APRNs specializing in cardiology have the potential to contribute to high-quality health

care, but until the aforementioned challenges and barriers are overcome a large portion of potential for APRNs specializing in cardiology will remain untapped.

### **Education Gaps**

There is an abundance of literature that supports the implication APRNs specializing in cardiology require more skill than their formal training and licensing requirements provide. It is a recurring connotation in the literature published by the ACC, current APRNs specializing in cardiology, Duke University, the Mayo Clinic, and other health institutions (AACN, 2015a; Brush et al., 2015; Dracup, 2017; Duke, 2017; Fang & Tung, 2009; Fitzgerald, Kantrowitz-Gordon, Katz, & Hirsch, 2011; Foster, 2010; Mayo, 2016; Rief, 2015; Scordo et al., 2016) In addition to the minimum recommendations for working in today's practice environment, the literature suggests APRNs specializing in cardiology require the ability to: a) analyze pathophysiology for various cardiovascular disease processes, b) develop cardiovascular diagnoses, formulate a treatment plan and evaluate patient response to treatment, c) utilize evidence based medicine practices using quality, cost effective care, d) educate patients and families regarding the cardiovascular disease process, including primary and secondary cardiac prevention, while remaining cognizant of the patient's emotional, physical and cultural needs, e) develop organizational skills to manage patient caseload, f) develop effective communication and presentation skills with the interdisciplinary team, and g) transition from the novice nurse practitioner into the professional role as a cardiovascular nurse practitioner (Mayo, 2016). While the vast majority of APRN programs address many of these content areas, it may not be adequate, and Flinter (2005) suggests that in order to ensure adequate preparation, APRNs

specializing in cardiology need further training before being deemed competent in their full scope of practice.

### **No Official Standard**

APRNs specializing in cardiology must rely on their own resources to establish and monitor competency as there are no official set standards at this time (AACN, 2015a; Clabo, 2016; Foster, 2010; NCSBN, 2008; Scordo et al., 2016); Of the 28 pieces of literature, several identified a direct link to past and present APRN curricula demonstrating cardiac educational preparation that may be inadequate. Additionally, the development and application of an exam measuring core competency related to cardiology may be helpful, but at present, no mandatory national accreditation is in existence (Scordo et al., 2016). At the moment APRNs are allowed to specialize but they cannot be licensed within that specialty area, and the boards of nursing have delegated that education assessment strategies for specialties be developed by the nursing profession (APRN Consensus Work Group and the National Council of State Boards of Nursing APRN Advisory Committee, 2008). There is encouragement from the NCSBN and AACN to complete specialty education, however, unless an APRN specializing in cardiology attends one of the seven nurse practitioner cardiac specialty programs in the US, their specialty education must be completed separately from the core APRN education, most often via postgraduate education (APRN Consensus Work Group and The National Council of State Boards of Nursing APRN Advisory Committee, 2008).

### **A Change is Required**

The current method of providing education and clinical training has continued to evolve from the model developed by Loretta Ford in 1965, but is still in need of improvement to

“promote seamless academic progression” (Fitzgerald et al., 2012, p. 4). Carollo and Mason (2016) state the strength of an APRN’s clinical judgment is a direct reflection of their access to quality education and training. Hence, the AACN (2006; 2015b) is seeking to identify gaps in APRN curriculum to ensure their students achieve competency. APRN population-focused competencies are not consistent in their level of specificity and student achievement, limiting professional nursing organization’s ability to define the APRN role (Clabo, 2016). Additionally, the one-to-one preceptor-student model presently in use is largely unchanged from the clinical training model that has been in use for over 45 years (AACN, 2015a; LeFlore & Thomas, 2016). That model was designed for a much more limited APRN student population, and is creating an intense and often dissatisfying competition for clinical training (AACN, 2015a). The challenge to quell the growing demand for qualified preceptors as well as create APRN population focused educational tracks requires a massive amount of time, effort, and collaboration, but continues to remain a primary goal of several professional nursing organizations (APRN Consensus Work Group and The National Council of State Boards of Nursing APRN Advisory Committee, 2008; AACN, 2015a; AACN, 2016a; National Organization of Nurse Practitioner Faculties [NONPF], 2017). In its efforts, the AACN (2006; 2015a; 2016a) has reinforced the need for entry level core competencies to help improve the DNP graduate’s chances of obtaining employment across a wide range of APRN positions. In an attempt to overcome the current nursing faculty shortage, AACN (2016b) support also includes the implementation of the current three entry level core competencies of APRN education as an avenue for Doctor of Philosophy (PhD) prepared faculty to contribute in the preparation of DNP students, despite their differing credentials (Fitzgerald et al., 2012).

### **Functional Independence Expected**

The current APRN curriculum provides education to APRN candidates with the expectation of entry level practice. Several pages within the *Adult-Gerontology Acute Care and Primary Care NP Competencies* list independent practice competency areas, however literature describing the set standards that will allow that independent practice competency to be achieved is somewhat lacking for those APRNs planning to specialize in cardiology (AACN, 2006; AACN, 2015b; AACN, 2016a; Fitzgerald et al., 2012).

### **Untapped Potential**

APRNs specializing in cardiology contribute to high-quality health care, but much of their potential may be untapped due to the aforementioned challenges and barriers (APRN Consensus Work Group and The National Council of State Boards of Nursing APRN Advisory Committee, 2008; Fitzgerald et al., 2012; LeFlore & Thomas, 2016; Scordo et al., 2016;). An increased use of APRNs in all areas of cardiology has become a trend in the US as the demand for skilled cardiac clinicians have increased. APRNs specializing in cardiology have become an integral part of the cardiovascular team, improving efficiency and patient outcomes (Mayo, 2016). Physicians are coming to increasingly rely upon them as partners, in order to assist in the team management of some of the most clinically challenging patients in the hospital such as those with advanced heart failure, cardiac transplants, and assist devices (Brush et al., 2015; Mayo, 2016). The ACC predicts the need for APRNs specializing in cardiology will increase dramatically in the near future, however, the variability in their training and education may impact their ability to successfully perform in a leadership role (Brush et al., 2015).

Interdependency, cooperation, autonomy, efficiency, and effectiveness may increase with uniform regulations across the nation (Brush et al., 2015).

### **Strengths**

Literature of a qualitative design is able to provide details about human behavior, emotion, and characteristics of the APRN specializing in cardiology profession that a quantitative study would have difficulty matching (United States Department of Health and Human Services [HHS], 2016). The qualitative data included in the literature appears to give great insight to the behaviors, needs, desires, routines, and a variety of other information that is essential to describe the needs of current and future APRNs specializing in cardiology as well as their evolving role in today's healthcare system. The majority of literature utilized critical theory, focusing on the culture of current and future APRNs specializing in cardiology. The study sample size consisted mostly of current APRNs specializing in cardiology, but also included professionals who fulfill the roles complementary to APRNs specializing in cardiology, such as those involved in providing team-based care (physicians, physician assistants, pharmacists, and nurses). None of the literature included requirements for remaining anonymous or confidential, cultural competence was not an issue as all data sources were fluent in English, and interviews appeared to follow a semi structured format, leaving the respondent able to freely answer open ended questions without being guided or redirected by the clinical scholar. The powerful quality of the human experiences obtained in the literature make it a compelling alternative to quantitative data. The literature, particularly from the AACN, frequently cites existing works as acknowledgment of the as of yet unfulfilled demand to describe the needs of APRNs planning to in cardiology. However, this recognition has merely served to demonstrate the necessity for

further literature contributions. Cardiology is but one subspecialty of the APRN role which appears to be following in the footsteps of CRNAs, similarly encountering a comparable existence in previously published literature. The reproducibility and stability of the data from multiple sources (28), within differing levels of health care hierarchy and from APRNs specializing in cardiology at variable stages in their journey shows great reliability in the literature. While the aims of publication were not always congruent, the information remained consistent. The honesty and genuineness confirm the validity of the literature via triangulation, respondent validation, constant comparison, and contradictory evidence. Regarding triangulation, the needs of APRNs planning to specialize in cardiology were studied via self-report, narrative analysis, structured interviews, and document studies, guaranteeing authenticity and descriptive informative data. Respondent validation is addressed through the many pieces of literature which were autobiographical accounts from current APRNs specializing in cardiology, absolving inconsistencies and assumptions. The constant comparison of health policy statements, fact sheets, semi structured interviews, and task force reviews from 2006 to 2017 enabled the identification of the five aforementioned commonalities produced by the literature. Direct contradictory evidence could not be obtained, rather indirect contradictory evidence surfaced as subtleties and complexities of the literature that may have been overlooked by previous inquiries. For example, when attempting to understand why a subspecialty competency for APRNs specializing in cardiology is not in existence, the literature does provide an answer to this question, but the information must be pieced together from several sources, and is provided in the context of encouragement for APRNs specializing in cardiology to further their subspecialty education on their own.

### **Weaknesses**

Weaknesses in the literature stem from its nonexperimental or naturalistic design. There are no randomized controlled trials, statistical data, or double blind studies behind the data collection. There is no mention of semi structured interviews being recorded, categorized, or transcribed. Additionally, the sampling, when applicable, was relatively small and purposeful in order to support the goal of the study. Several pieces of the literature were small scale (single person interviews) and the authors were themselves APRNs specializing in cardiology, which leaves the credibility open to question. Along those same lines, several pieces of literature did not have a clearly stated research question, as that was not the aim of the publication. Often times the literature was an autobiographical piece about a day in the life of a APRNs specializing in cardiology, and this literature could be viewed as one sided as the information is the product of one professional's recollections. Confirmability remains somewhat weak considering not all of the literature published was done so with the intent to describe the needs of APRNs planning to specialize in cardiology. Literature from the AACN appears to have been published with the intent to provide guidelines for current APRN education and competencies but without extensively delving into subspecialties. A final weakness is in the lack of literature. The ACC health policy statement on the role of advanced practice providers does an outstanding job of dictating the requirements and expectations of APRNs planning to specialize in cardiology, however, they are the only formal organization who has published data directly citing the need for cardiac core competencies since the NCSBN delegated the task to the nursing profession in 2008 (Brush et al., 2015). The other literary sources are indeed valuable, but they are

independent, informal resources that must be bound together in order for their ideas to be seen as transferable.

### **Gaps**

Literature surrounding an intent to provide core competencies for APRNs planning to specialize in cardiology is all but absent. Similar gaps in the literature concern the limited amount to be found in relation to postgraduate residencies or fellowships for APRNs specializing in cardiology, and still less information available regarding implementation of a formal subspecialty paid preceptorship to become part of the DNP degree. These gaps create an inability to draw conclusions as to the value behind these proposals. There is a slight implication in the literature to suggest these ideas could transition into practice, but not at the level of evidence one could assume would be required to be the catalyst for the start of that change.

### **Limitations**

The most consistent limitation of the literature is its inability to be generalized to current and future APRNs specializing in cardiology that did not take part in the data. Without an increase in available literature the commonalities produced by the literature could be considered isolated issues. Additionally analyzing the literature did not consistently lead to the desired results. For example it was not possible to isolate subspecialty core competencies from *Adult-Gerontology Acute Care and Primary Care NP Competencies* (AACN, 2016a). Furthermore, an APRN educational governing body that acknowledges APRNs planning to specialize in cardiology require a higher level of skill than their formal training and licensing requirements currently provide is not well grounded in the data. With this published implication left unaddressed by the AACN or the NCSBN the current state of preparation for APRNs

specializing in cardiology will remain unchanged, left to require further examination. The financial impact of a change in DNP curricula is of a large magnitude, and is as of yet unknown. However, it is not unreasonable to assume that the cost and educational overhaul would have an outcome similar to the cost of education and training required for other APRN specialty programs, such as Certified Registered Nurse Anesthetists (CRNA).

### **Summary**

According to the literature APRNs planning to specialize in cardiology require a change in the educational preparation and training they receive. As Bandura's SCT suggests, continuous evaluation of themselves and the quality of their education grants APRNs planning to specialize in cardiology the opportunity to assess their current learning environment for future educational needs. Exploration of these needs may indeed benefit from a greater involvement of an APRN educational governing body such as the AACN. This study will continue to describe the needs of this specific APRN population with the goals of confirming the aforementioned commonalities, seeking out additional commonalities, and gaining insight into potential solutions and recommendations.

### **METHODS**

The purpose of this project was to describe the needs of APRNs who plan to specialize in cardiology. The findings from this project may serve as the foundation for developing future projects relating to APRNs specializing in cardiology potential. It may also serve as a neutral stepping stone towards change for preparation for APRNs specializing in cardiology.

## **Project Design**

This DNP project followed a qualitative design to describe the needs of APRNs planning to specialize in cardiology. The literature uncovered five main commonalities of this subspecialty population. The findings were then evaluated through the lens of the literature, to identify consistencies or notable differences. Study aims were: 1) to describe what is needed for APRNs to specialize in cardiology, 2) describe what tools are currently utilized to achieve specialization as an APRN specializing in cardiology, 3) describe the needs for individualized and team based care based on the current approach for APRNs specializing in cardiology and 4) describe what is the motivation of an APRN who plans to specialize in cardiology? Learning about these needs led to implications for clinical practice for APRNs specializing in cardiology.

## **Recruitment and Sample**

### **Inclusion Criteria**

Inclusion criteria for the participants in this DNP project included being a licensed, practicing APRN, working within a healthcare setting and providing care to cardiac patients. Additional criteria included being fluent in English and available for an interview. No participants who met the inclusion criteria were excluded from participation due to gender, race, ethnicity, or years as an APRN.

### **Recruitment**

Snowball sampling was used to obtain participants. I hoped to recruit approximately 10 participants to be interviewed. . Two large, local cardiology practices that employ approximately 16 APRNs who specialize in cardiology served as the recruitment sites for those willing to consent to an interview. At each practice's weekly APRN meeting the participants were

presented with the opportunity to participate in the study via a recruitment script. Please see Appendix A for the Recruitment Script.

### **Setting**

The initial introduction to study participants and explanation of study purpose precipitated at the weekly APRN meeting at a large, local cardiology practice, but the data collection took place in a coffee shop of the participant's choosing, where and when the participant was not working. The informal nature of the interview setting did not degrade the process of data collection or the integrity of the data collected. The environment allowed for the use of a tape recorder and background noise did not override data collection, Privacy was ensured by securing a seating location that was void of other patrons. The only absolutes were that each participant gave informed consent prior to participating and each met with the clinical scholar independently. Interview time lasted approximately 15 minutes for each participant.

### **Tools for Data Collection**

Face to face structured interviews are a known data source for descriptive qualitative studies. The use of structured questions may allow real world perspectives to provide authentic and meaningful data about the needs of APRNs planning to specialize in cardiology (Polit & Beck, 2012). The clinical scholar prepared a written topic guide with a list of areas to be covered relating to the aforementioned commonalities found in the literature. Questions were a mixture of open and closed ended, with the option for expansion on one third. Some of the questions included in the interviews consisted of: What was your motivation to become an APRN specializing in cardiology? After graduation, how prepared did you feel the start as an entry-level APRN specializing in cardiology? Did you require the mentorship of an expert level cardiac

clinician after graduation in order to demonstrate the requisite knowledge and skill level required is an APRN specializing in cardiology? Do you believe there should be a national certification or examination requirement to become an APRN specializing in cardiology? Please see Appendix B for a full list of the structured interview questions. The pace of data collection minimized stress by following the lead of the participant, ensuring their comfort level with the process. There was no specialty equipment required. A handheld tape recorder was used to record each structured interview with participants identified by a number only. Paralanguage such as tone, volume, and rate, kinesics such as posture and gesture, and facial expression also served as content in the data collection process.

### **Data Analysis**

The data was transcribed verbatim, with nonverbal communication descriptors included when appropriate. Transcriptions included appropriate symbols in the text to differentiate between interviewer and participant. Accidental alterations were minimized during the interview process itself. For example, if the project clinical scholar was unaware of the correct punctuation following a participant's response, the clarification was made in real time. Transcription was done by the clinical scholar and was member checked by doctorally prepared committee co-chair.

The sorting and grouping of the responses was akin to the approach taken to synthesize the five commonalities from the literature review. The data was organized according to similarity of responses and clusters of concepts. Further depiction of the categories determined the level of detail or specificity of the indexing. Findings were organized in a spreadsheet. The concepts that emerged were comprehensively summarized while reflecting the content of the literature review.

The information obtained in each structured interview was compared to the information obtained in each other structured interview so that the commonalities could be defined. Reflection of the findings occurred during the process of categorization.

### **Ethical Dimensions of the Project**

This project was approved by UA IRB. Please see Appendix C for the IRB Approval Letter. The clinical scholar and DNP project chairs have also completed ethical conduct in research training via the Collaborative Institutional Training Initiative (CITI).

The T502A was used to obtain informed consent from each participant prior to the start of data collection. Please see Appendix D for the T502A ICF consent form. Participant identities were kept confidential, only known to the clinical scholar and committee chairs, and their answers remained anonymous when referred to in the findings. Prior to each structured interview, participants were informed of the study purpose and the intended use of the data obtained. They were also informed of the length of time their signed consent form (six years) will remain with University of Arizona and that only the clinical scholar and DNP project chairs had access to the audio files, which were destroyed after verification of transcription. Data collected from the structured interview was strictly controlled through synchronized labeling of audio files and subsequent transcription via participant number. The data was then safely stored in a secure location requiring password protection to gain access while the project was being completed. It was then destroyed by the clinical scholar.

### **Non-Maleficance**

“Each person is a moral agent and must be recognized as worthy of dignity and respect” (Burkhardt & Alvita, 2008, as quoted in Zaccagnini, & White, 2017). There were several face to

face structured interviews with APRNs specializing in cardiology describing their needs in that role. The participants were assured safety and privacy via anonymity. The interviews were conducted at a private table, outside of work time, and outside of their work environment. The narratives were recorded for the purpose of accurate transcription and verification by the clinical scholar and DNP project chairs, but were then destroyed by the clinical scholar.

### **Beneficence**

The intent of this study was to produce beneficial information that may be used to guide future endeavors for APRNs specializing in cardiology preparation. There was no specialty equipment required, nor was it a potentially dangerous procedure. There was no risk of death or injury. There was, however, the potential for sensitivity, as the participant responses were personal views that are to be shared publicly.

### **Justice and Autonomy**

The participants were selected based upon the study requirements and not by any group vulnerability. Furthermore, the participants may also benefit from the study findings. These findings may affect their future colleague interactions, policies, and procedures. Each participant was given the same structured interview format, as much time as they felt they needed to answer the questions, they were allowed access to their transcript and to pre-approve it prior to synthesis if they so desired, and their responses were kept anonymous.

### **Trustworthiness**

The quality of a qualitative DNP project should be evaluated by the trustworthiness of the data (Polit & Beck, 2012). Methods such as confirmability, objectivity, and credibility help to enhance the trustworthiness by attempting to parallel standards of reliability and validity used in

quantitative studies (Polit & Beck, 2012). I followed Lincoln & Guba's (1986) evaluative criteria for trustworthiness looking at confirmability, objectivity, and credibility. I strived for confirmability using analyst triangulation between myself and two committee members to review my project findings. The degree of neutrality of this project was shaped by the respondents and not researcher bias, motivation, or interest. I strived for objectivity by staying true to the participant's stories, and sharing my audio tapes and transcriptions with my committee chair. I attempted credibility by utilizing prolonged engagement to help understand the culture of APRNs specializing in cardiology through participant interviews. To prevent emotional involvement with the participants, the clinical scholar did not intervene or offer any type of resolution in response to the data collected, serving merely as a moderator, in an effort to enhance clinical scholar credibility and the trustworthiness of the data. The structured yet open ended questions allowed participants to respond freely in effort to create variability and creativity in participant recollection. The participants remained anonymous upon recollection, ensuring sensitivity and concern for their professional and personal circumstances.

## **FINDINGS**

Seven individualized structured interviews were conducted. After obtaining demographics and getting further into the structured questionnaire. All of the participants requested to be kept informed of the study findings.

### **Demographics**

Participants were from the greater Phoenix metropolitan area. 90% were female (N=6) and 10% were male (N=1). These participants were prepared at either the master or doctoral level, and had specialized in either Family, Acute, Adult Gerontology, or Primary Care. In the

findings, there would arise the need for a delineation between the specialties, as the foundational training was different. Participant NP programs were either on campus or a mixture of online and on campus. Additionally, their nurse practitioner certification exam were taken through either the AACN, AANP, or ANCC. Participant age, race, gender, level of degree, and length of time in their role were recorded, to demonstrate demographic variability, however, participants remained anonymous when referred to in the findings, and these characteristics were not be used as limitations. Of the participants 71% (N=5) had a Master of Science in Nursing degree and 29% had a Doctorate of Nursing Practice degree. Participants completed several different nurse practitioner degree programs, 57% (N=4) chose family, 14% (N=1) acute care, 14% (N=1) adult gerontology acute care, and 14% (N=1) adult geriatric primary care. Participants' years in practice ranged from 10 months to 15 years. Of the four who worked strictly in an inpatient setting, three were prepared in a family nurse practitioner program and one was prepared in an acute care program. None worked strictly in an outpatient setting. Of the three who worked in both inpatient and outpatient settings, one was prepared in a family nurse practitioner program, one was prepared in an adult gerontology acute care program, and one was prepared in an adult geriatric primary care program. None of the study participants worked in a medically underserved or rural setting

### **Commonalities**

Thematic analysis “is the systematic process of coding, examining of meaning and provision of a description of the social reality to the creation of a theme” (Vaismoradi, Jones, Turunen, & Snelgrove, 2016, p. 100). Utilizing thematic analysis comprehensive patterns from the participant's experiences were extracted. The findings from the structured interviews were

divided into three major commonalities based on study participants' statements: APRNs specializing in cardiology have limited educational opportunities, APRNs specializing in cardiology require a higher level of skill than their formal training and licensing requirements provide, and the need to validate knowledge for APRNs specializing in cardiology. These commonalities are pivotal to describe the needs of APRNs who plan to specialize in cardiology. Further analysis of the commonalities can be found in the discussion section. The commonalities were organized according to study aims in order to speak to the purpose of the study.

### **The Motivation of an APRN Specializing in Cardiology**

The participants all related that they had developed their interest in cardiology prior to the initiation of their graduate studies. In fact, 71% (N=5) reported knowing they were going to specialize in cardiology while still completing their bachelor's degrees. The majority, 86% (N=6), of study participants reported being motivated to become an APRN specializing in cardiology due to prior exposure to cardiac patients. Often, the motivating factor could be linked back to a mentor that the participant looked up to who was also an APRN who specialized in cardiology. One participant remembered: "I was a CV step down nurse and the nurse practitioners that worked with the surgical team were amazing!... so that's what motivated me to go back to school". Another shared how the influence of an experienced APRN who specialized in cardiology shifted her educational focus: "...she said to me 'Do you want to take care of nurses or do you want to take care of patients?' and I immediately called up the school and switched from clinical nurse specialist to APRN". However, there was a more serious tone to one report of being motivated to join not only the healthcare field but cardiology specifically due to a family member who required cardiac care.

**Degree programs.** The study participants chose their particular degree program for a variety of reasons. Of the four who completed a family nurse practitioner program, two reported that they thought the broad scope of training afforded them an environment that was set up for success by allowing them more flexibility with job opportunities. Those who chose acute care believed a family nurse practitioner program would not be appropriate for their plan of working in the operating room, and those who chose adult gerontology acute care did so because they were looking to practice in the inpatient setting and did not want a pediatric or obstetric population. Those who chose adult geriatric primary care did so specifically due to their love of the geriatric population.

#### **Current Tools Utilized by APRNs Specializing in Cardiology**

**Cardiac courses.** A cardiac specific course was unavailable to 71% (N=5) of study participants in their nurse practitioner degree program. Of those, two completed an acute or adult gerontology program and three completed a family program. One cardiac specific course was available to two study participants, half of which completed acute or adult gerontology programs and half completed a family program. While only two study participants were able to complete a cardiac specific course while in nurse practitioner school, all participants took steps post-graduation to build on the entry level cardiac education provided by their programs in core courses such as anatomy and physiology, health assessment, and pharmacology.

**Cardiac clinical rotations.** Of the participants, five were not able to complete a cardiac clinical rotation while in school, of which one completed an adult gerontology acute care program and four completed a family program. Each reported that a cardiac clinical rotation was not offered and some reported that they were discouraged from seeking one out upon inquiry.

Those who were able to complete a cardiac clinical rotation while in school stated they had to obtain special permission from their school in order to do so and then seek out a cardiac practitioner without assistance from their school.

### **Needs Based on the Current Approach for APRNs Specializing in Cardiology**

**Starting as an entry level APRN specializing in cardiology.** All of the study participants reported that their schooling and clinical rotations were not enough to prepare them to start as an entry level APRN specializing in cardiology. Several participants either laughed and or rolled their eyes while shaking their head “no” while answering this particular question. One APRN specializing in cardiology stated “No. That would be an *emphatic* [emphasis added] no.” Several reported feeling confident with basic assessment skills and prepared to do general documentation, but all reported feeling unprepared in the areas of diagnosing, preparing a treatment plan, or billing. When asked to expand on their thoughts, study participants showed reluctance in their desire, pausing, breaking eye contact and looking down at their laps. Eventually they utilized verbiage such as overwhelmed, scared, uncomfortable, inadequate, and woefully unprepared. One participant spoke quietly: “I had very little understanding of the scope of cardiac conditions. I don’t think I knew how much I didn’t know.” Several participants shook their heads “no” while answering, and one participant recalled: “...I felt very uncomfortable going right into cardiology...it was a *very* [emphasis added] high learning curve going in. I struggled a lot”. Another participant shared: “I was *very* [emphasis added], very timid and I asked about every little thing because I was scared to death that I was going to kill someone.” This exhibits a parallel to a new graduate nurse’s ability to meet expectations for patient safety in settings which require critical thinking. Nurses are more likely to meet those expectations as

their years of experience increase, with new graduates the least likely to demonstrate critical thinking on an independent level (Fero, Witsberger, Wesmiller, Zullo, and Hoffman, 2009).

### **Team Based Care and New and Evolving Cardiac Techniques**

Most reported feeling as though they were able to adequately participate in team-based care, although all study participants related that ability to their previous work experience as a nurse and not due to preparation by their degree program. Over half reported feeling as though they were able to meet the challenges brought on by new and evolving cardiac techniques, equally split between those who completed acute or adult gerontology programs and those who completed a family program. Some attributed their success to being an 'early adapter', but the majority attributed it to their previous work experience as cardiovascular intensive care unit nurses or a cardiovascular intensive care unit nurse educator.

### **Expert Cardiac Clinician as a Mentor**

All study participants found it necessary to complete either an extensive on the job cardiac rotation with an expert cardiac clinician as a mentor or a post graduate cardiac nurse practitioner fellowship. Of the four who completed an extensive on the job cardiac rotation, three completed acute or adult gerontology programs and one completed a family program. Interestingly, the three who completed a post graduate cardiac nurse practitioner fellowship all completed family programs.

### **Continuing Education**

Continuing education was regarded as an essential requirement for all study participants to remain competent in their field. Most expressed excitement about attending conferences such as the American College of Cardiology, American Academy of Nurse Practitioners, European

Cardiovascular Consortium. Other continuing education included participating in cardiac grand rounds, and several made the decision to complete postgraduate cardiac fellowships and or cardiology specialty courses. All study participants also reported that self-study is still a mandatory yet enjoyable daily requisite in their role as an APRN specializing in cardiology.

### **What is Needed for APRNs to Specialize in Cardiology?**

#### **Mentorship for a Minimum of One Year**

All study participants agree that the mentorship of an expert cardiac clinician for a minimum of one year after graduation is essential in order for an APRN specializing in cardiology to demonstrate the requisite knowledge and skill level required by their role. Following graduation, six reported not having a comprehensive grasp on completing a thorough exam of the cardiac patient, diagnosing, and then providing guideline driven treatment in a timely manner. Those same participants also stated they required in-depth training in relation to cardiac subspecialties such as electrophysiology, cardiac catheterization, echocardiograms, and ventricular assist devices.

#### **Confidence in Preparation**

After the mentorship, all study participants stated they felt much more adequately prepared to start as an entry level APRN specializing in cardiology. In fact, those who chose to complete a one-year cardiac fellowship prior to employment reported not requiring their full orientation time when they started their new position. Participants recalled feelings of extraordinary confidence and an ability to function very independently, managing most things comfortably on their own.

### **National Certification or Examination Requirement**

All study participants agreed that a national certification or examination requirement in order to become an APRN specializing in cardiology would benefit the profession. The majority of participants believed that it would be a formal way to validate knowledge for APRNs specializing in cardiology. Most stated there is currently not a good system in place for standardization of APRNs in general, and there needs to be a prerequisite way to prove rudimentary knowledge in the cardiac field to ensure one will not cause harm to a patient. One participant clarified:

“Technically, with my degree I could pick up tomorrow and work in urology. I know *nothing* [emphasis added] about urology. I am not competent to be sitting in an office treating those patients. So I feel like there does need to be a bit of a gatekeeper in that regard, and by doing so there would be more programs in place to help get people prepared for that.”

Another explained:

“I don’t know that everyone would be as motivated and self-teaching as I was. Certainly it would be much harder if you didn’t have the passion behind it, and I feel that cardiology is a field in which there are some important and hard decisions that need to be made clinically in order to best support the patient and I feel that you’re not always going have a physician to back you up at every step so you need to feel prepared in order to do all that.”

Additionally, several stated that a separate certification or examination requirement would provide standardization so that the same minimum level of care is delivered across the board.

One participant voiced a concern over academic rigor and whether or not all educational programs are of equal value.

Finally, several participants felt that exam preparation would prove beneficial in the long run as it would continue to build on the foundational cardiac knowledge already obtained. One

participant reported: “I have been reading and studying and I have started to see myself grow, and I think having that prior could only benefit us down the road”.

However, there were some caveats to go along with the certification or examination requirement. Almost half stated that there would need to be caution used when designing the exam. One participant stated: “I mean, would you necessarily want to be tested on everything that you would know in your fifth year [as an APRN specializing in cardiology] when you’re in your first year?” Furthermore, several stated that not everyone performs well on tests, and that may provide a barrier to obtaining the right person for the role.

## **DISCUSSION**

To describe the needs of APRNs who plan to specialize in cardiology I obtained information directly from those who currently practice in the role. I originally believed that there would be a great delineation between those prepared in acute care or adult gerontology programs and those prepared in family programs; however, the findings revealed that differing program preparation made no significant difference in study participant responses.

Albert Bandura’s Social Cognitive Theory was a suitable theory for this project in that the three components of SCT, environment, behavioral, and cognitive factors, and their reciprocal relationship revealed themselves several times throughout the discussion. The exploration of the learning needs of APRNs specializing in cardiology helped to identify the goals and reasonable expectations of the learning process. SCT is largely based on motivation and self-efficacy, further described using the three concepts of environmental, behavioral, and cognitive factors (Bandura, 1986). As Bandura (1986) explains, the three concepts of SCT exhibit a bidirectional reciprocity, each concept impacting the other two. Organizing the participant responses to the

interview questions demonstrated this reciprocity in several ways. The participant's beliefs about their own capabilities and that effect on their success in their role was directly impacted by their environment and the tools currently utilized to achieve specialization as an APRN specializing in cardiology (i.e. the curriculum, the coursework objectives, the availability of appropriate courses to meet the needs of the learner) (Bandura, 1986). Additionally, their environment had a direct impact on their behavior, with participants choosing to acquire the mentorship of an expert cardiac clinician or complete a cardiac fellowship post-graduation, describing the needs for individualized and team based care. Bandura's (1986) explanation of human behavior stemming from observational learning correlates with study participant's motivation for becoming APRNs specializing in cardiology due to their observation of other APRNs specializing in cardiology. SCT helped clarify the basic determinants of study participant cognitive, behavioral, and environmental reciprocal causation.

### **Limited Educational Opportunities**

#### **Availability of Degree Programs**

In the findings, some of the participants voiced that educational opportunities are limited. While it seems there are a variety of degree programs to choose from, 75% (N=3) of those who completed a family nurse practitioner program reported that an acute care program simply was not available. Some study participants would have rather completed an acute care program, but were unable to gain access to one and therefore chose a program that was not their preference. There are positive coinciding benefits between the study findings and the literature review; the AACN (2006; 2015a; 2016a) believes the current primary care curricula will improve an APRN's chances of obtaining employment across a wide range of positions, and half of study

participants who chose a family program were in agreement and selected their program for that reason. This speaks to the environmental concept of SCT where some participants felt they were afforded an environment that was set up for success (more flexibility with job opportunities), which increased their belief that they would succeed. Study participants believed in their ability to maintain control of their environment, therefore lowering the risk of experiencing self-doubt and self-sabotage.

### **Lack of Cardiac Focus in Educational Preparation**

Limited educational opportunities seemed to affect participants by not providing enough cardiac focus in their educational preparation. There is a strong interest in cardiac advanced practice nursing, in fact, more acute care APRNs choose cardiology as their focus than any other (AANP, 2016). However, of the 350 colleges and universities which offer APRN programs only seven offer a specific cardiovascular concentration (Duke University, 2017; Graduate Nursing Education, 2017). That is equivalent to 2% of APRN educational opportunities which offer training that corresponds to this growing subspecialty.

Carollo and Mason (2016, p. e2) write: “A complex and rapidly developing health care system beckons curricular reform that aligns with the market need”. When study participants discussed their preparation for the APRN specializing in cardiology role, over 70% (N=5) reported that their degree program did not include any cardiac specific course and over half were not able or allowed to complete a cardiac clinical rotation. When asked for clarification why a cardiac clinical rotation was not allowed, the reason cited was that the student was in a family nurse practitioner program and they were encouraged to focus more on primary care. Of the study participants who chose to become APRNs specializing in cardiology, over half completed

family nurse practitioner programs. The study findings correlate with the literature from Fitzgerald et al. (2012, p. 4) which suggest the current method of providing education and clinical training has continued to evolve from the model developed by Loretta Ford in 1965, but is still in need of improvement to “promote seamless academic progression”. The participants communicated that although current APRN education is a good starting point, it is not adequately preparing APRNs specializing in cardiology to step into the role immediately upon graduation. This may suggest a detrimental flaw in the educational preparation of APRNs specializing in cardiology, and it aligns with the literature from the AACN (2006; 2015b) that discusses identification of gaps in APRN curriculum to ensure students achieve competency. Further education for an APRN who plans to specialize in cardiology is not mandated, but has become a primary collaborative goal of several professional nursing organizations such as the American College of Cardiology (Brush et al., 2015), APRN Consensus Work Group and National Council of State Boards of Nursing APRN Advisory Committee (2008), and the AACN (2015a; 2015b).

### **Educational Gaps**

Throughout the interviews it seemed participants did not feel as though they completed a degree program that encompassed more than a basic foundation described by one participant as: “this week in heart failure lecture type stuff”. This may be the reason why every study participant agreed that APRNs specializing in cardiology require more skill than their formal training and licensing requirements provide. Once they graduated, all study participants stated they were ill equipped to perform in their roles. The interviews revealed the need for APRNs specializing in cardiology to be proficient in several areas of cardiology that participants

discovered were not covered in their degree programs. A few of the areas mentioned were identification and management of acute and chronic cardiac conditions per current guidelines: diagnosing and preparing treatment plans, adjusting medication regimens, 12 lead EKG interpretation, interpretation of echocardiograms, nuclear, treadmill, and echo stress testing, electrophysiology studies, cardiac catheterization studies, tilt table testing, and computed tomography angiography. The findings also revealed that each participant possessed enough self-sufficiency to realize they would need further educational preparation and mentoring before being able to start as a competent, confident provider.

In SCT, the cognition factor discusses one's belief about their own capability and how it may influence success or failure. Study participant's purposeful pursuit of a desired outcome beyond what was provided to them in their educational preparation (mentorship with an expert cardiac clinician or cardiac fellowship) demanded a high level of self-efficacy. Participants considered what was needed to be successful as an APRN specializing in cardiology and whether they were going to be able to achieve it with their current level of preparation. Additionally, each had to summon the motivation to continue their educational journey post-graduation. Hence, they independently secured a mentorship with an expert cardiac clinician that helped them to build their skills. This mentorship was obtained without assistance from their educational programs. They needed to independently seek out and secure a position in a clinical environment with a culture advocating for the development of critical thinking and confidence in cardiovascular knowledge (Mayo, 2016). These study findings are consistent with the review of the current literature in that a large portion of potential for APRNs specializing in cardiology may be untapped due to challenges and barriers such as requiring more skill than their formal training

and licensing requirements provide (AACN, 2015a; Brush et al., 2015; Dracup, 2017; Duke, 2017; Fang & Tung, 2009; Fitzgerald et al., 2012; Foster, 2010; Mayo, 2016; Rief, 2015; Scordo et al., 2016); relying on their own resources to establish and monitor competency without an official set standard (AACN 2015a; Clabo, 2016; Foster, 2010; NCSBN, 2008; Scordo et al., 2016); and the current APRN curriculum provides education to APRN candidates with the expectation of entry level practice (AACN, 2006; AACN, 2015b; AACN, 2016a; Fitzgerald et al., 2012).

The data collected from the participants in this study reveal that APRNs specializing in cardiology may be attempting to map out a realistic educational path that prepares them to achieve cardiac specialization. The behavioral aspect of motivational human behavior in the SCT discusses the abilities of the learner, asking if they have the knowledge and skill set to be successful. The study findings reveal that participants did not believe that they had the knowledge and skill to be successful upon completion of their programs, and their self-efficacy may have been affected by this.

Neither the Consensus Model for APRN regulation, nor the National Council of State Boards of Nursing assess or regulate competency at the specialty level, instead asking that development of education in relation to subspecialties such as cardiology be done by professional organizations (APRN Consensus Work Group and The National Council of State Boards of Nursing APRN Advisory Committee, 2008). This current gap in educational preparation will continue to remain a barrier for those APRNs who do wish to be licensed at the specialty level. The findings also reiterate the literature from the AACN (2006; 2015b; 2016a) and Fitzgerald et al., (2012) that addresses APRN curriculum providing education to APRN

candidates with the expectation of entry level practice. Finally, after completing a mentorship with an expert cardiac clinician, the participants stated they felt adequately prepared to start as an entry level APRN specializing in cardiology, but not as an established cardiac APRN. This delineation displays a difference between deficiencies in preparation as opposed to being new to one's field.

### **The Need to Validate Knowledge of APRNs Specializing in Cardiology**

The study participants continue to seek formal validation of their knowledge, but as of yet are unable to do so through a required national certification or examination for APRNs specializing in cardiology certification or examination. Several times in the findings a study participant questioned how to prove their proficiency to their patients and their peers, how to standardize the minimum level of knowledge required to be an APRN specializing in cardiology, or how to ensure that those who enter the field truly possess the academic rigor that is needed in order to cause no harm and be successful. This APRN population appears to be waiting on nursing professional organizations to validate their achievements. However, study participants were cognizant that the duty of competency is on the professional. This data appears to represent the need for national certification or examination for APRNs specializing in cardiology. These findings are consistent with what was identified in the review of literature, which included present APRN curricula demonstrating a lack of cardiac educational preparation that may have contributed to a delay in the APRN's ability to perform job duties as expected (AACN 2006; 2015b; Fitzgerald et al., 2012).

### **Trustworthiness**

Using participant's words verbatim tried to lend authenticity to the reality that is presented in the findings (Polit & Beck, 2012). I followed Lincoln & Guba's (1986) evaluative criteria for trustworthiness looking at confirmability, objectivity, and credibility. I strived for confirmability using analyst triangulation between myself and two committee members to review my project findings. I strived for objectivity by staying true to the participant's stories, and sharing my audio tapes and transcriptions with my committee chair. I attempted credibility by utilizing prolonged engagement to help understand the culture of APRNs specializing in cardiology through participant interviews. The structured yet open ended questions allowed participants to respond freely in effort to create variability and creativity in participant recollection.

### **Strengths**

The inclusion criteria enabled a more representative APRN population, making the study more generalizable. Participants were ensured anonymity, allowing them to openly express their personal experiences without the need to edit or hold back. There is a congruence demonstrated between the study purpose, aims, theory, and findings that is displayed within the findings. Lastly, the study findings can be added to the body of knowledge that APRNs who plan to specialize in cardiology may need to participate in a curriculum that is more directed at their needs.

### **Limitations**

The limitations of this DNP study are most evident in its descriptive design. Furthermore, the sample size was small, consisting of less than 10 participants, drawn from the same

geographical area. To prevent emotional involvement with the participants, I did not intervene or offer any type of resolution in response to the participant responses, a format which may have limited the data collected. Finally, as this was my first DNP project I indeed exhibited three common mistakes of novice qualitative interviewers: 1) losing track, 2) steering, and 3) lack of clarity (Gesch-Karamanlidis, 2015, p. 715).

### **Impact on Practice**

The findings of this DNP project reveal that the study participant's perceptions that their coursework did not prepare them to instantly step into the role of an APRN specializing in cardiology. APRNs continue to be a valued part of cardiovascular team based care but are in need of additional education and training added to their degree programs in order to do so immediately upon graduation. Nursing organizations could collaborate in several ways to implement and support a change in current APRN curricula. The development of additional programs specific to APRNs specializing in cardiology, APRN cardiology fellowships, and APRN cardiology residencies may increase knowledge and impart a higher level of competency in this particular field. Standardized preparation of a cardiac specific APRN national certification or examination requirement may reduce the variability that was revealed by the study participants.

The structured interviews provided the opportunity to openly discuss participant's thoughts about their educational preparation. The study findings demonstrate the desire and need for a change in educational preparation for APRNs specializing in cardiology. There may be potential positive effects on patient outcomes gained from further standardization of education for APRNs specializing in cardiology. For example, an effort to separate and specify education

for APRNs specializing in cardiology independent of acute care, adult gerontology, or family, similar to the approach towards educating CRNAs, may prove beneficial (Duke, 2016, Mayo, 2016). The participant's self-efficacy and that effect on their success in their role has been directly impacted by their environment and the tools currently utilized to achieve specialization as an APRN specializing in cardiology. Each participant agreed that a national certification or examination requirement in order to become an APRN specializing in cardiology would be beneficial if added to those tools. This DNP project may help to provide a starting point for discussion that could lead toward national validation for APRNs specializing in cardiology.

### **Dissemination**

It is through dissemination that I will be able to provide future implications for practice. At this point, the most I can say in regards to future practice is that a change definitely needs to be made, but the starting point and level of change are at this time simple inferences.

As the study demonstrated, the needs of APRNs who plan to specialize in cardiology necessitate sharing the findings throughout the nursing community. The target audience may include nursing educational bodies as well as other health care specialties looking for new ways to adapt to the changing demands of the healthcare environment barrier to obtaining the right person for the role.

### **CONCLUSION**

In conclusion, this study used structured individualized interviews to describe the needs of APRNs who plan to specialize in cardiology. The findings showed that APRNs specializing in cardiology must overcome limited educational opportunities and require a higher level of skill than their formal training and licensing requirements provide. APRNs specializing in cardiology

are a valued resource within the cardiovascular community as a part of team based care, but their struggle to obtain competency and validation of their knowledge is ongoing due to variability among educational preparation and a lack of certification standardization. This DNP project has addressed ways in which improvements could be made such as the development of additional programs specific to APRNs specializing in cardiology, APRN cardiology fellowships, APRN cardiology residencies, and a cardiac specific APRN national certification or examination requirement. Meeting these needs may allow APRNs who plan to specialize in cardiology to participate in educational preparation better suited to their professional role.

APPENDIX A:  
RECRUITMENT SCRIPT

### Recruitment Script

Hello, my name is Allison Stokes and I am a DNP candidate at the University of Arizona. I am working on a project describing the needs of advanced practice registered nurses (APRN) who plan to specialize in cardiology. This study may help assist the education process of APRN students who would like to specialize in cardiology. Would you be willing to participate in a short (approximately 15 minute), private, audio recorded interview with myself, taking place at a coffee shop or library of your choosing at a time when you are not working? Your demographic information will be published in the study findings, but in an anonymous manner, and will not be shared with anyone other than myself and a research assistant to verify the accuracy of the transcription. You will need to sign a consent for this interview and you may withdraw your participation without negative consequences. The audio recording will be destroyed following transcription and verification of the transcripts, and the consent will be destroyed after no more than six years. An Institutional Review Board responsible for human subjects' research at the University of Arizona reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

You may contact me at [allisonstokes@email.arizona.edu](mailto:allisonstokes@email.arizona.edu) or (940) 594-4438.

APPENDIX B:  
STRUCTURED INTERVIEW QUESTIONS

Participant #

Structured Interview Questions

1. Demographics

Age:

Gender:

School:

Degree:

Number of clinical hours required:

Length of time as an RN prior to becoming an APRN specializing in cardiology:

Length of time in practice as an APRN specializing in cardiology:

2. What was your motivation to become an APRN specializing in cardiology?

3. What made you choose Family/Acute/Adult Gerontology/Primary Care?

4. How did you select your school?

5. How far into your education did you decide to specialize in cardiology?

6. How many courses did you have which were specific to cardiology?

7a. After graduation, how well prepared did you feel to start as an entry level APRN specializing in cardiology?

7b. In the inpatient setting?

7c. In the outpatient setting?

8. After graduation, did you feel as though you were able to adequately participate in team based care?

9. After graduation, did you feel as though you were you able to meet the challenges brought on by new and evolving cardiac techniques?

10a. Tell me about the preparation you had for this role?

10b. If a specific cardiac rotation was completed: Do you feel as though that rotation was adequate to prepare you to start as an entry level APRN specializing in cardiology?

11. Once you began working as an APRN specializing in cardiology, in what areas did you feel prepared and/or unprepared?

12a. What kind of continuing education have you participated in?

12b. Is there a particular type of course you tend to gravitate to?

13a. Did you require the mentorship of an expert cardiac clinician after graduation in order to demonstrate the requisite knowledge and skill level required as an APRN specializing in cardiology?

If so,

13b. For what length of time?

13c. What type further education did you receive during this mentorship?

13d. After this mentorship did you feel adequately prepared to start as an APRN specializing in cardiology?

14a. Do you believe there should be a national certification/examination requirement to become an APRN specializing in cardiology?

14b. Why or why not?

APPENDIX C:  
THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD APPROVAL  
LETTER



**Research**  
Office for Research & Discovery

Human Subjects  
Protection Program

1618 E. Helen St.  
P.O. Box 245137  
Tucson, AZ 85724-5137  
Tel: (520) 626-6721  
<http://rgw.arizona.edu/compliance/home>

**Date:** October 12, 2017  
**Principal Investigator:** Allison Lee Stokes  
**Protocol Number:** 1710911206  
**Protocol Title:** Describing the Needs of Advanced Practice Registered Nurses  
Specializing in Cardiology  
**Level of Review:** Exempt  
**Determination:** Approved

**Documents Reviewed Concurrently:**

*Data Collection Tools: Structured Interview Questions.docx*  
*HSPP Forms/Correspondence: f107\_v2016-07\_0 (completed).doc*  
*HSPP Forms/Correspondence: f200\_v2016-07 (completed).doc*  
*HSPP Forms/Correspondence: Signature page.pdf*  
*Informed Consent/PHI Forms: t502a\_icf\_consent\_form\_v2016-07\_0 (completed).doc*  
*Informed Consent/PHI Forms: t502a\_icf\_consent\_form\_v2016-07\_0 (completed).pdf*  
*Recruitment Material: Recruitment script.docx*

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This submission meets the criteria for exemption under 45 CFR 46.101(b). This project has been reviewed and approved by an IRB Chair or designee.

- The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).
- All research procedures should be conducted according to the approved protocol and the policies and guidance of the IRB.
- Exempt projects do not have a continuing review requirement.
- Amendments to exempt projects that change the nature of the project should be submitted to the Human Subjects Protection Program (HSPP) for a new determination. See the Guidance on Exempt Research information on changes that affect the determination of exemption. Please contact the HSPP to consult on whether the proposed changes need further review.
- You should report any unanticipated problems involving risks to the participants or others to the IRB.
- All documents referenced in this submission have been reviewed and approved. Documents are filed with the HSPP Office. If subjects will be consented, the approved consent(s) are attached to the approval notification from the HSPP Office.

APPENDIX D:  
T502A ICF CONSENT FORM



## **The University of Arizona Consent to Participate in Research**

**Study Title: Describing the needs of Advanced Practice Registered Nurses who plan to specialize in cardiology.**

**Principal Investigator: Allison Stokes**

**This is a consent form for research participation.** It contains important information about this study and what to expect if you decide to participate. Please consider the information carefully. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to participate.

### **Why is this study being done?**

This descriptive inquiry (needs assessment) to describe the needs of Advanced Practice Registered Nurses (APRNs) who plan to specialize in cardiology. Study aims are: 1) to describe what is needed for APRNs to specialize in cardiology, 2) describe what tools are currently utilized to achieve specialization as a APRN specializing in cardiology, 3) describe the needs for individualized APRNs specializing in cardiology and team based care based upon the current approach, and 4) describe what is the motivation of an APRN who plans to specialize in cardiology?

### **What will happen if I take part in this study?**

You will be asked to identify a time and place that is convenient for your schedule and a meeting will take place. Interview questions will be asked of you in a one on one capacity and the answers will be audio recorded.

### **How long will I be in the study?**

The interview will last no longer than 60 minutes.

### **How many people will take part in this study?**

Approximately 10

### **Can I stop being in the study?**

**Your participation is voluntary.** You may refuse to participate in this study. If you decide to take part in the study, you may leave the study at any time. No matter what decision you make, there will be no penalty to you and you will not lose any of your usual benefits. Your decision will not affect your future relationship with The University of Arizona. If you are a student or

employee at the University of Arizona, your decision will not affect your grades or employment status.

**What risks or benefits can I expect from being in the study?**

No anticipated risks are foreseeable; some expected benefits may be to assist the education process of APRN students who would like to specialize in cardiology.

**Will my study-related information be kept confidential?**

The only people with access to the recording and transcript will be the PI in the research assistant. Once recordings are transcribed and verified the recordings will be destroyed. The information will be stored in an electronic facility which requires a username and password to access. The data will be kept for a maximum of six years, then destroyed.

*Your records may be reviewed by the following groups:*

- *The University of Arizona Institutional Review Board*

**Who can answer my questions about the study?**

For questions, concerns, or complaints about the study you may contact *Allison Stokes* at [allisonstokes@email.arizona.edu](mailto:allisonstokes@email.arizona.edu). For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact the Human Subjects Protection Program at 520-626-6721 or online at <http://rgw.arizona.edu/compliance/human-subjects-protection-program>. An Institutional Review Board responsible for human subjects research at The University of Arizona reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

**What happens if I am injured because I took part in this study?**

If you are injured as a result of participating in this study or for questions about a study-related injury, you may contact **Allison Stokes** at the above email address.

*Although the risk of injury by participating in this investigation is low, if you suffer an injury from participating, you should seek treatment. The University of Arizona has no funds set aside for the payment of treatment expenses for this study. You will be provided with any new information that develops during the course of the research that may affect your decision whether or not to continue participation in the study.*

**When may participation in the study be stopped?**

The PI may stop the subject's participation at any time if the PI feels continuing the interview may cause the participant to feel uncomfortable or if the interview time runs over 60 minutes. No matter what decision is made, there will be no penalty to the participant.

**What are the costs of taking part in this study?**

The cost of taking part in the study is a maximum of 60 minutes of your time.

**Will I be paid for taking part in this study?**

Participants will be offered reasonable compensation of coffee and pastry during participation. *By law, payments to subjects may be considered taxable income.*

**Will educational records be accessed?**

No. The interview does a request the participant's educational background for demographic purposes and study reproducibility, but this is an oral disclosure only. Education records used by this research project are education records as defined and protected by Family Educational Rights and Privacy Act (FERPA). FERPA is a federal law that protects the privacy of student education records. Your consent gives the researcher permission to access the records identified above for research purposes.

**Will my data or specimens be stored for future research?**

The only people with access to the recording and transcript will be the PI in the research assistant. Once recordings are transcribed and verified the recordings will be destroyed. The information will be stored in an electronic facility which requires a username and password to access. The data will be kept for a maximum of one year, then destroyed.

*Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released.*

*Also, your records may be reviewed by the following groups:*

- *The University of Arizona Institutional Review Board*

**Signing the consent form**

I have read (or someone has read to me) this form, and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

---

**Printed name of subject**

---

**Signature of subject**

---

**Date**

**Investigator/Research Staff**

I have explained the research to the participant or the participant's representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or to the participant's representative.

---

**Printed name of person obtaining consent**

---

**Signature of person obtaining consent**

---

**Date**

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