DEVELOPMENT OF A PEDIATRIC EMERGENCY MEDICINE FELLOWSHIP FOR ADVANCED PRACTICE REGISTERED NURSES: A CASE STUDY

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FELLOWSHIP IN EMERGENCY MEDICINE FOR ADVANCED PRACTICE REGISTERED NURSES

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The Supervisory Committee certifies that this ***disquisition*** complies with North Dakota State University's regulations and meets the accepted standards for the degree of

DOCTOR OF NURSING PRACTICE

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ABSTRACT

New graduate advanced practice registered nurses (APRNs) face multiple challenges when entering an autonomous practice, including challenges acquiring clinical competency, gaining clinical knowledge regarding their specialty area, and expanding their clinical skills to perform the new job effectively. Some of this clinical knowledge and exposure to clinical skills may not have been available to the APRN during his/her graduate education. Transitioning from a novice to an expert takes patient time, clinical exposure, experienced mentorship, and hospital finances. This lack of available mentorship and experience is especially evident in an area of an acute care specialty. At the same time, healthcare organizations are looking for talented and experienced providers while attempting to reduce cost and to improve talent recruitment.

The pediatric emergency medicine fellowship for APRNs was designed to decrease the new APRN's transition time to practice, to advance clinical competence, and to improve patient outcomes. The fellowship was designed for the pediatric emergency department at Children's Hospitals and Clinics of Minnesota (Children's). The 12- month fellowship was designed to serve as a link between a university education and an autonomous practice in pediatric emergency medicine, provide valuable on-the-job experience for new graduates, contribute to clinical excellence, and allow the hospital to retain experienced talent while decreasing organizational cost.

The fellowship project received approval from the IRB departments of both North Dakota State University and Children's. The project plan was presented to and endorsed by the Children's leadership and was authorized through the department of Continuing Medical Education. A needs-assessment survey administered to nurse practitioners working in Children's Emergency Department directed the fellowship's curriculum development.

Several unforeseen organizational changes affected the project's implementation, including the medical fellowship director's terminal illness, unforeseen Emergency Department APRN turnover, and APRN fellowship director staffing changes.

Overall, the lessons learned from this project's development and the networking that arose from the curriculum-development, allowed for improved orientation of the Emergency Department's nurse practitioners, provided new opportunities for continuing medical education, pertinent to the Emergency Department staff, and improved the overall organizational support for the nurse practitioners' clinical education at Children's.

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DEDICATION

This work is dedicated to registered nurses (RN), advanced practice registered nurse (APRN) preceptors, and clinical instructors. Through their tireless commitment, enthusiasm, and perseverance, they shape and mold new graduate nurses into competent, knowledgeable, and caring professionals. Their invaluable role modeling shapes our practice and is one of the greatest gifts to the service of nursing and to medicine.

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LIST OF ABBREVIATIONS

AAENP .....American Academy of Emergency Nurse Practitioners

ACGME .....Accreditation Council for Graduate Medical Education

APP .....Advanced Practice Provider

APRN.....Advanced Practice Registered Nurse

ATLS.....Advanced Trauma Life Support

BLS .....Basic Life Support

CHC .....Community Health Center

CHCI.....Community Health Center, Inc.

CHOP.....Children's Hospital of Philadelphia

CRNA .....Certified Registered Nurse Anesthetist

ED .....Emergency Department

EM.....Emergency Medicine

EMR.....Electronic Medical Records

FQHS .....Federally Qualified Health Center

FTE .....Full Time Equivalent

GME.....Graduate Medical Education

GI .....Gastroenterology

OB/GYN .....Obstetrics and Gynecology

PALS.....Pediatric Advanced Life Support

PEM .....Pediatric Emergency Medicine

PES.....Professional Education Services

ROS.....Review of Systems

OM .....Otitis Media

U of M.....University of Minnesota

US .....United States

CHAPTER ONE. BACKGROUND AND SIGNIFICANCE

The new advanced practice registered nurse (APRN) faces multiple challenges when transitioning into an independent practice. The specialty clinical experience, which is necessary for a successful transition, can be difficult to obtain. New graduates describe feelings of guilt and uncertainty regarding their clinical skills (Kelly & Mathews, 2001), the stress of finding a job in an area of interest, as well as a loss of personal control over their time and privacy (Kelly & Mathews, 2001). Many potential employers, especially in a critical-care setting, prefer to hire APRNs with some clinical experience. Experience is difficult for new graduate practitioners to obtain. Acquiring experience may be even more difficult in pediatric emergency medicine (PEM).

Challenges Associated with the Transition to Practice

To date, there are no APRN graduate programs with PEM focus, and graduates focus on either primary care or acute care programs in a pediatric specialty. Pediatric primary care APRN graduate programs may have limited clinical hours available in an acute care setting while acute care pediatric APRN programs are not readily available in Minnesota. The closest Midwestern universities are in Chicago, Illinois and Milwaukee, Wisconsin (Pediatric Nursing Certification Board [PNCB], 2014). Because of the clinical complexity and the varying degrees of acuity for pediatric patients presenting to the emergency departments, some employers may prefer hiring APRNs with primary as well as acute care experience (R. Sicoli, personal communication, May 4, 2014). This desire for broad pediatric experience further decreases the pool of available candidates.

Healthcare organizations prefer experienced candidates because a new graduate's transition to an autonomous practice takes time and extensive resources. Recruitment and

retention of talent is associated with substantial costs. Hospital orientation programs are not only lengthy, but they are also costly and could cause orientation fatigue for an emergency department's personnel. Few of the recent studies address the issues surrounding the transition of new APRNs to an acute care practice as well as the problems associated with job satisfaction and the retention of new graduates. In their 2013 study, Sargent and Olmedo commented that new APRNs described feelings of being ill prepared for the high expectations of their new role to care for acutely ill patients; having inadequate support and training from their physician colleagues due to time constraints; and, subsequently, experiencing high turnover rates.

Problem Statement

Healthcare organizations prefer to hire APRNs who have experience in both acute care and primary care to staff their pediatric emergency departments. New APRNs who have completed primary care programs may have limited acute care clinical experience while APRNs who completed acute care programs may have limited primary care clinical experience. The lack of acute care nurse practitioner programs in the Midwest decreases the availability of acute care prepared Minnesota APRNs. Additionally, because EM clinical experiences are not always available during the education process, new APRNs require lengthy orientation programs to complete the competencies which are required to practice in pediatric emergency departments. Fellowship programs in pediatric EM for new APRNs may decrease the costs for the healthcare organizations, improve care, and increase the competence for those APRNs who seek a career in pediatric EM.

Project Description

Hospital-based fellowships have been successful in providing needed clinical experience for new graduates. However, no such fellowships exist in PEM. To provide new APRNs with valuable PEM experience after graduation, the writer created a PEM fellowship for APRNs.

This one-year fellowship provides new graduates with an option to work beside experienced PEM providers while obtaining an invaluable educational experience. The fellowship development created multiple challenges and required input from multiple clinical departments at the hospital. First, the fellowship training needed to offer the APRN fellow's clinical time within multiple pediatric specialties. Due to the diverse conditions of pediatric patients presenting to the emergency department, APRNs must be familiar with the concepts of pediatric orthopedics, infectious diseases, surgical assessment techniques, emergency medicine procedure skills, advanced life-support competencies, and concepts of primary care, toxicology, and immunology. Incorporating multiple disciplines into the APRN fellow's education process was an integral part of the fellowship. Similarly, other emergency medicine (EM) fellowships adapted multi-disciplinary programs in their training (Carilion Health System, 2014). Collaborating with multiple disciplines across the hospital for the training's clinical experience created challenges because several independent practice groups had to agree to provide valuable training time for the nurse fellow.

The Institute of Medicine elaborated on the future of healthcare and described nurses as full partners with physicians, who act as change agents in redesigning the current healthcare (Institute of Medicine, 2010). APRNs are well-integrated members of the healthcare team. Interprofessional collaboration between physicians and APRNs produces better patient outcomes and a more efficient use of resources (Corbridge, Tiffen, Carlucci, & Zar, 2013).

Interprofessional collaboration between pediatric specialties was at the cornerstone of this fellowship. APRNs train in an integrative environment where physicians and advance practice providers function collaboratively to achieve the best patient outcomes.

Another challenge for the fellowship design was difficulty with an analysis of the final costs. The literature review did not show a breakdown of the costs for similarly functioning fellowships. However, institutions, which disclosed the overall costs for their programs, found fellowships to be worthwhile (Varghese, Silvestri, & Lopez, 2012). In addition, no comparable job title for the APRN fellow existed at Children's. APRN fellow reimbursement differed from that of a staff APRN. A new definition of the job position needed to be created in order to include fair-practice and appropriate labor-law guidelines. In addition, a new, well-defined position for a fellowship director had to be established. The fellowship structure, including the identification of people responsible to deliver the education content for the didactic portion of the fellowship, needed to be clearly delineated.

The appropriate didactic and clinical content for the fellowship also needed to be identified. In contrast with long-standing, post-baccalaureate nurse-residency programs, which have well-established curriculum, evaluation, and certification methods, there is no reported equivalent or standardization for the new graduate APRN fellowships (Sargent & Olmedo, 2013). While there are several published examples of APRN fellowship programs in acute care, their development methods, and educational approaches are specific to the needs of each hospital (Carolina Health Care System, 2014). Some existing programs are modeled after physician fellowship training (Danielson & Rushton, 2011); while others rely on input from staff, needs-assessment surveys, and job-satisfaction assessments to develop, institution-specific fellowship programs (Carolina Health Care System, 2014).

For example, the Carilion clinic relied on its staff physicians and advanced care providers to design a 12-month fellowship program in EM. That program has clinical rotations in 11 subspecialties, weekly didactic presentations, and pertinent specialty courses (Carilion Health Care System, 2014). The Children's' Hospital of Philadelphia (CHOP) developed pediatric emergency APRN fellowship program in collaboration with senior emergency department APRNs and three pediatric APRN program directors (Varghese, Silvestri, & Lopez, 2012). Developing the curriculum for this fellowship program was done with the invaluable support of current emergency room APRNs and physicians as well as from the results of the needs assessment, which was completed prior to the program's design phase.

Including an appropriate local university with an established primary care pediatric APRN, or an acute care pediatric APRN program in the fellowship's design was considered, however determined unfeasible for this phase of the fellowship's development. Difficulty creating a system that would provide reimbursement for educational credits arose, and the reimbursement was not achievable when this report was written. Overall, the involvement of local universities was considered beneficial for the project.

National certification was another important point, which was considered when designing this program. While there is no recognized national certification for a PEM APRN fellow or for EM APRN fellowship programs, the American Nurse Credentialing Center (2014) recognizes emergency APRNs with an emergency nurse practitioner certification (ENP-BC). The American Academy of Emergency Nurse Practitioners (AAENP) has developed an emergency nurse practitioner certification (ENP-C) through the American Nurse Practitioner Certification Board (ANPCB). These certifying bodies require a certification examination and two-year EM

experience for their candidates. This fellowship can serve as an important clinical and didactic experience component for this certification requirement.

Program Purpose and Objectives

The purpose of this PEM fellowship is to bridge the gap in clinical education of new graduate APRNs. This fellowship is designed to develop competent, confident, and knowledge APRNs who can safely transition to an independent practice in PEM. The objectives for this APRN fellowship are as follows:

1. Provide comprehensive and meaningful educational experience for new nurse practitioners in the practice area of pediatric emergency medicine.
2. Facilitate the graduates' understanding of the diagnosis, and treatment of common pediatric emergency presentations.
3. Boost excellence in patient satisfaction and the quality of care by producing competent, confident, and knowledgeable providers.
4. Improve outcomes for the new-hire orientation process, and alleviate orientation fatigue for the emergency room staff.
5. Recruit and retain talent for the organization through a fellowship program.
6. Lower the overall organizational cost by reducing the overall non-billable training time for new hires and by decreasing the position advertisement and recruitment costs.

CHAPTER TWO. LITERATURE REVIEW

The current literature describing fellowships and residency programs for APRNs was reviewed using the PubMed, Ovid, and Google Scholar search engines. The search revealed a discrepancy for the terms used to describe postgraduate education programs for APRNs. Some postgraduate APRN programs were called "fellowships" while others called similar postgraduate APRN programs "residencies." Wiltse and Fairman (2015) proposed that "residency" is frequently associated with clinical education prior to licensure while "fellowship" is associated with a postgraduate and post-licensure specialty training. Flinter (2011) called for a national clarification of terms. Because both terms were used to describe similar programs and no nationally accepted term exists, both descriptors were used for this literature search. Key words included the following terms: nurse practitioner, advanced practice nursing, fellowship, residency, emergency medicine, and pediatrics.

Review of the literature and web content revealed a nationwide trend for postgraduate training programs for APRNs. However, published data describing how a fellowship program is run are limited. Some organizations have established APRN fellowship programs but choose not to publish their experiences. Others describe the need for such programs but are not able to create postgraduate training at their institution (Yeager, 2010). From the limited data available, the United States (US.) currently has at least 29 APRN residency and fellowship programs in multiple specialties (Graduate Nursing Education, 2014). Actual published data, however, only covers a fraction of those programs. The American Academy of Emergency APRNs (AAEAPRN) lists 10 fellowships for APRNs in adult EM. While there are no published postgraduate APRN fellowships in pediatric EM, Children's Hospital of Philadelphia (CHOP)

holds a pre-licensure clinical fellowship for APRNs which is designed to be integrated into the last semester of graduate school (Varghese, Silvestri, & Lopez., 2012).

This chapter reviews the current literature, describes national recommendations for the creation of APRN fellowship programs; illustrates structure of APRN fellowship programs; describes fellowship programs' goals, purpose and financial structure; and, finally, reports on fellowships' implications for clinical practice and national health policy.

Recommendations for Postgraduate Education

The theme of bridging the gap between APRN graduate education outcomes and the demands of the modern workplace is universal in many of the publications reviewed (Flinter, 2011; Rosenzweig et al., 012; Yeager, 2010; Zapatka, Conelius, Edwards, Meyer, & Brienza, 2014). While U.S. universities continue to prepare knowledgeable and dedicated APRNs, new graduates are faced with increasingly difficult clinical requirements and complex patient populations when entering the workforce. The majority of APRN programs are not suited to provide the highly specialized education that is required for seamless entry into the acute specialties. The education-experience gap is especially evident when new APRNs enter narrow specialty fields: oncology, trauma, or EM to name a few (Rosenzweig et al., 2012; Varghese, Silvestri, & Lopez, 2012; Yeager, 2010).

The difficulty of the initial transition is evident for both the acute care and primary care specialties. Primary care APRNs and APRNs working at nationally funded Community Health Centers, Inc. (CHCI) are caring for more complex patient populations than in the past (Flinter, 2005). The transition from graduate APRN to an independent provider takes time and financial investment from the organization. At some institutions, due to a lack of experienced APRNs, graduate preceptorships are not available. Therefore, some graduates are left to learn on their

own or from sporadic and improvised education which is offered by other clinicians. The lack of an appropriate preceptorship may cause anxiety and role confusion for a new graduate and may reduce the opportunities to learn appropriate interpersonal, leadership, and clinical skills (Flinter, 2011). In some instances, new APRNs may be unsupported when the transition is the most stressful.

Postgraduate APRN education can be beneficial. The cited benefits of postgraduate APRN education included bridging the procedural and clinical knowledge gaps, facilitating autonomous practice, expanding the understanding of interprofessional roles, promoting independence, and improving clinical competency though mentorship (Zapatka at al., 2014). In addition, postgraduate education can address the current and projected future shortage of APRNs in specialties where the need is greatest (Flinter, 2011). Finally, postgraduate education can ease the stress of the transition not only for the APRN, but also for the medical care team and the organization (Flinter, 2011).

While much of the reviewed literature supported APRN fellowships, one article argued against mandated postgraduate fellowships. Nicely and Fairman (2015) argued against mandatory APRN postgraduate education. The authors believed that the safe, quality care provided by APRNs is well documented and that little evidence exists in favor of regulated postgraduate education or further development of already established skills competencies. However, this argument has two pitfalls. First, postgraduate education focuses on a new graduate's immediate transition period and does not attempt to improve the already well-established concept that the APRN's care is safe and effective. In addition, the authors are Ph.D.-prepared registered nurses (RNs) and their experience with APRN practice is not

immediately clear. The authors concede that APRNs with little previous RN experience in the specialty area may benefit from transitional postgraduate training (Nicely & Fairman, 2015).

Postgraduate Transition to Practice

Several of the reviewed articles focused on the successful transition of new APRNs to independent practice. Susan Yeager (2010) described difficulties that a new acute care APRN faces when entering a tertiary-care setting, specifically in acute care, including role-transition anxiety and clinical-knowledge limitations. The acute care APRN's role is evolving, and the number of APRNs working at trauma centers is growing. Assimilation models for APRN transition are limited, and there are few role models to provide education and guidance to new graduates. Thus, the responsibility of integration is left to novice APRNs, hospital administration, and physician colleagues (Yeager, 2010). Standardized orientation procedures are not always available for new graduate APRNs.

Transition-to-practice anxiety was expressed by APRNs who worked in both acute care and primary care settings. A new graduate's anxiety often revolved around uncertainty with clinical skills, a lack of knowledge about complex cases, and the inability to manage complex patients independently. In areas where APRN recruitment was low, few experienced APRN preceptors were available to provide mentorship for the incoming APRNs. Postgraduate transition was described as lengthy and difficult. Some postgraduate difficulties included the creation of the "imposter syndrome," the inability to immediately manage complex patients independently, a loss of productivity, and a potential decrease in patient-care excellence (Varghese, Silvestri, & Lopez, 2012; Yeager, 2010). Rosenzweig et al. (2012) addressed the preparedness of APRNs who were transitioning to an oncology practice. Clinical and nonclinical skill gaps caused a personal sense of inadequacy, stress, anxiety, and strained working

relationships with physicians and nursing colleagues. The stress was linked to a lack of experience and a lack of support during the initial orientation process. An organized and focused approach centered on robust clinical expertise specific to each specialty may improve the graduate's transition to practice.

Transition to Practice in an Acute Care Setting

Transitioning to an APRN role in an acute care setting has unique challenges. The complexities of modern acute care as well as the specific procedural skills that are required of the APRNs make this transition unique (Dillon, Dolansky, Casey, & Kelly, 2016). A successful transition depends on the individuals' skills and clinical proficiency; ability to adapt to and modify their environment; and the organizational support, communication, and leadership (Dillon et al., 2016). Bush (2014) called for nurse executives to champion postgraduate APRN training programs in order to foster retention and job satisfaction for the new APRNs.

Some organizations have responded to the above-mentioned concerns by creating APRN fellowships. Building on existing knowledge and basic clinical skills, the APRN fellowships provide in-depth training for a chosen specialty area. Zapatka et al. (2014) described a pioneering interprofessional adult primary care APRN fellowship that was instituted by the Veterans Affairs (VA) Office of Academic Affiliation. The VA fellowship is a collaborative educational model through a partnership and interprofessional practice with an established physician residency program. Flinter (2011) described a primary care APRN residency, in Connecticut, which was built on a CHCI model. Sargent and Olmedo (2013) described a primary care APRN fellowship associated with the Massachusetts Medical School in Worcester. An advanced care provider fellowship in critical care was described by Joffe, Pastores, Maerz, Mathur, & Lisco, (2014). The American Academy of Emergency Nurse Practitioners (AAENP,

2016) listed 10 APRN fellowships in emergency medicine. On that list is an integrative fellowship for advanced care providers at the Carilion Clinic in Roanoke, Virginia. An in-depth description of the Carilion fellowship is in Appendix A.

Goals and Purpose

The fellowship programs' goals and objectives were addressed in the reviewed literature. The goal of the APRN fellowship at Children's Hospital of Philadelphia (CHOP) is to streamline the orientation process, to foster confidence in the new APRN, and to provide a more comprehensive learning experience. Simplifying the transition process, working within a multidisciplinary team, and having a supportive learning environment allows new APRNs to take on multiple and heavier patient assignments (Varghese, Silvestri, & Lopez, 2012). Because the CHOP fellowship was intended for APRNs in their last semester of school, the goals differed slightly from other fellowships, which were designed for the postgraduate education of already licensed providers.

In contrast, the Carilion Clinic fellowship for advanced care providers focused on educating highly motived providers about the clinical and procedural knowledge that is pertinent for the field of EM, preparing the advanced care providers for independent practice with specialized experience, and retaining talent for future employment in the Carilion Clinic system. The Carolina Health Care System (2016) aimed for the retention of extremely focused and well-trained advanced care providers after their fellowship completion. Other fellowships' goals focused on the recruitment and retention of APRNs in the areas of greatest need (Flinter, 2011).

Fellowship Structure

In contrast to highly regulated medical fellowships, postgraduate programs for APRNs are neither mandated nor regulated. Therefore, organizations are building programs to fit the

needs of their institution and specialty areas. Despite the lack of a mandated structure, the fellowships are surprisingly analogous. Only fellowships designed for the EM setting are reviewed here.

Most of the reviewed EM fellowships for APRNs were built around a one-year curriculum. The education is augmented by exposure to varied clinical-practice disciplines (Carilion Health System, 2014; Zapatka et al., 2014). A didactic portion of the experience broadens the current knowledge base and the clinical aptitude in a specialty area. Hands-on clinical experiences in emergency medicine are supplemented with training for the pertinent emergency medicine procedures. The APRN fellowship at CHOP allowed the shadowing of experienced APRNs from specialty settings, including, but not limited to, otolaryngology, orthopedics, endocrinology, neurology, trauma, and cardiology (Varghese, Silvestri, & Lopez, 2012). The Carilion Clinic and Carolinas Health Care System's fellowships had structured rotations in the above-mentioned specialties, along with additional areas that included EMS transport and general surgery (Carolina Health Care System, 2016).

Many fellowships were built on the concept of multidisciplinary education and an integrative, collaborative approach that focused on holistic patient care. Flinter (2011) envisioned a cohesive team-care approach for APRN fellowship education and believed that specialty rotations were essential for the APRN's overall clinical growth. Flinter's program involved didactic and experiential clinical sessions that addressed didactic content, clinical skills, and procedures.

Student Requirements

Most of the reviewed fellowship programs required APRN students to be licensed in their state of practice and to possess peer recommendations before starting the program. Candidates

were selected through national recruitment, online publications, and web advertising. Some fellowships listed the organization's reimbursement guidelines for fellows. The average reimbursement was about $65,000 per year with full benefits (Carilion Health System, 2014; Carolina Health Care System, 2016).

Despite the modest reimbursement, fellowships did not experience a lack of applicants. The Carilion Clinic listed more than 20 applicants for two positions, and Cincinnati Federally Qualified Health Center (FQHC) listed 45 finalists for four positions during the reviewed years (Carilion Health System, 2014; Flinter, 2011). The application process was not immediately clear from the Literature Review.

Fellowship Evaluation

Most of the reviewed fellowships had some form of monthly, weekly, or quarterly evaluations for both the program and the fellow. Cincinnati's primary care fellows performed evaluations of their clinical preceptors, completed weekly journals, and had regularly scheduled evaluations (Flinter, 2011). The Carilion Clinic EM fellows had monthly meetings with the medical directors to voice concerns, and each student had a written evaluation from his/her preceptor or the attending physician for each specialty rotation. A major component of the evaluation was rating the student's performance, interpersonal skills, and clinical competence (Carilion Health System, 2014). In addition, students evaluated the effectiveness of the education, and provided goal feedback and goal-completion evaluations.

While the above-mentioned qualitative data are helpful with providing immediate feedback for the programs' design and effectiveness, robust quantitative data for the fellowships' evaluation are lacking in the literature. Such data could include the number of students with full-time jobs post-graduation, the salary range for APRN fellows versus non-fellows' post-

graduation, patient satisfaction, adherence to the patient-care protocols, and adverse-event reporting while in a fellowship. More studies in the above-mentioned areas and more data collection from students who already have APRN fellowships are needed.

Fellowship Funding

While federal medical education funding is available for physicians' fellowship programs, federal funding is not available for APRN residency and fellowships (Flinter, 2005). APRN fellowship programs look to internal financial support and to external grants to fund the programs (Neumann, 1997). Legislative and policy changes are needed to create a sustainable financial model for the reimbursement for APRN fellowship training.

The review of literature revealed that fellowships have varied forms of financial reimbursement for their programs. The EM fellowship at CHOP uses internal funding. Carilion Clinic and other EM fellowships use the APRNs' billing revenue to fund the fellowship. A primary care fellowship at Connecticut's Community Health Center (CHC) uses internal funds but urges for federal funds to be available in order to help with the program's cost (Flinter, 2011).

Literature was not immediately clear if the pediatric EM APRN fellows at CHOP were financially reimbursed (Varghese, Silvestri, & Lopez, 2012). However, the APRN fellowship at CHOP was designed for students in their last semester of graduate school, and reimbursement would not be required. If any financial reimbursement was considered for the program director and the preceptor staff at CHOP, it was not discussed in the article. In contrast, all the other postgraduate fellowships, which were reviewed, had some form of financial reimbursement for the key staff.

The total cost for the reviewed fellowship can be divided into three major areas: the APRN fellow's salary, the fellowship director's salary, and the overhead costs. None of the reviewed institutions listed the costs or the budgets for their fellowships. However, the interview with the nurse practitioner (NP) and physician assistant (PA) fellowship director at the Carilion Clinic revealed that its program was financially successful and independent (Fellowship Director, personal communication, November 19, 2014). The key to the fellowship's financial independence came from the APRN's ability to bill for services during the fellowship (Carilion, 2012). In addition, the Carilion Clinic reduced the overall organizational costs associated with the recruitment and retention of APRN talent when successful APRN fellows were hired by the clinic after the fellowship's completion. Reduced time and cost for new staff members' orientation was another beneficial factor cited by the Carilion Clinic.

Funding sources for postgraduate APRN programs varied. Currently, Graduate Medical Education (GME) funds physicians' fellowships through Medicaid and Medicare GME funds. Historically, those funds are not available for APRN fellowships. Administrators of the primary care APRN fellowship in Connecticut made a case for using Medicaid and Medicare GME dollars to fund the program (Flinter, 2005). Flinter argued that patients at Federally Qualified Health Clinics (FQHC) are overwhelmingly Medicaid and Medicare insured, thus the federal government may have the most to gain from further improvements to the FQHC model with fellowship development. In 1998, section 1886(K) of the Social Security Act was added to include payment to non-hospital providers and FQHC providers as well as rural health clinics from the Medicaid and Medicare GME funds. However, those funds are still not available for non-physician residency-training programs. Flinter and others argued that appropriate expansion or a legal definition of "approved medical residency program" to include APRN fellowships is

needed in order to secure suitable reimbursement to cover APRN fellowship training (Flinter, 2005).

Education Guidelines and Legislative Considerations

Current specialty certification paths differ for physicians and non-physician providers. Completing fellowships in a chosen specialty area is required as part of the medical education. To be board certified in EM, a candidate must complete EM fellowship training at a program that is approved by the Accreditation Council of Graduate Medical Education (ACGME) or the American Osteopathic Association (AOA), and that is deemed acceptable to the Board of Certification in EM (BCEM; American Board of Physician Specialties, 2016). No such requirement exists for APRN fellowships.

A report released by the Future of EM Summit in 2009, urged all EM providers to attend postgraduate education (Schneider et al., 2010). With only ten postgraduate EM-specific training programs for APRNs in the United States, there are few options for comprehensive APRN postgraduate training in EM (Schneider et al., 2010). If postgraduate education in EM becomes a requirement for APRNs, more postgraduate EM fellowships for APRNs will need to be developed.

The Future of Nursing recommended residency programs for nurses in the following circumstances: after the completion of education, following the completion of an advanced practice degree, or with a change of practice area (Institute of Medicine, 2011). The report provided recommendations about funding options and called for the state nursing boards to support APRN residency development and residency completion for all APRNs.

Theoretical Framework

Establishing a nurse practitioner (NP) fellowship program calls for a change in how organizations perceive NP training and orientation. A new level of time and resources will need to be invested, and the majority of this investment will come from the emergency department's staff. This new involvement level will create a need for additional staff resources. In cases where the emergency department's staff is not fully vested in creating a new program, the additional need for resources can be met with resistance. Opposition can occur even if the changes are proven beneficial, are needed for the organization's overall benefit, or are necessary for clinical excellence. Therefore, the reasons behind individuals and group's willingness or resistance to change are important to understand. Behavioral-change models can give insight about why certain ideas and innovations are likely to be adopted or rejected in different clinical environments.

Diffusion of Innovation

One of the behavioral-change theories, diffusion of innovation, was developed by Rogers in 1962. The theory was successfully applied in many fields, including communication, public health, social work, and marketing (Rogers, 2003). Once a new idea or innovation is offered, the innovation must be disseminated within the organization. As stated by Rogers, dissemination or diffusion of an idea does not happen simultaneously among group participants. While some people are more likely to embrace innovation sooner, others may have qualities that guide them to embrace the innovation later.

Rogers (2003) developed five adopter categories that describe the major qualities of group members: innovators, early adopters, early majority, late majority, and lagers. Adapting interventions, which are suitable for each group type, allows change agents to successfully

implement innovations and to adjust as needs arise during the innovation's dissemination. Grouping the stakeholders for this APRN fellowship project into five established adopter categories aided with the development of an individualized approach for information diffusion, creating a culture where innovation is more likely to succeed.

According to Rogers, the diffusion of innovation occurs over time through organizational communication channels when the innovators and the early adopters spread the seeds of innovation to others. In the initial stages of this project, this writer was an innovator of the APRN fellowship concept in the organization. This writer disseminated the concept of the fellowship through personal conversations, group presentations, and engagement meetings with the stakeholders. Over time, other early adopters accepted the APRN fellowship as beneficial to the organization and clinical practice. According to Rogers (2003), once the critical mass of the early adopters exceeds 30% of the group, the process of organizational change can begin.

The critical mass of early adopters reached 30% about three years in to the fellowship development. At that time, Children's' support of the project increased, the project gained momentum, and benefits of the project became apparent. Added benefits of the project included, curriculum sharing between clinical practice sites, a standardization of onboarding, and preceptor support.

The innovation-decision model helped the fellowship director map out and, subsequently, work through the project's implementation stages with greater success (Health Behavior & Health Education, 2015). However, the theory has limitations because it does not include organizational support or the cost, of implantation of the innovation. To achieve success, the fellowship director needs to have the support of innovators and program champions in every phase of fellowship planning.

Theory of Learning

In addition, a learning theory guided the development of this APRN fellowship. The Community of Inquiry Framework, which was developed by Randy Garrison and later expanded by Norman Vaughan, supports faculty-engaged blended courses (Phillips, Forbes, & Duke, 2013). The theory is based on the teaching and learning theory of educationalist John Dewey who emphasized that knowledge is embedded within social content. A multidisciplinary fellowship experience blends varied methods of education delivery, spans multiple specialties, and creates a culture where an APRN fellow will grow and achieve clinical maturity. Adult learners have a well-established sense of self and a desire to perform in a blended community of professionals from multiple disciplines.

Preceptors, professional staff, and pediatric hospital specialists who interact with the APRN fellow during the training create a community where the fellow's education transpires. During the fellowship training, role modeling is achieved through preceptor demonstrations. With this role modeling, the APRN fellow gains knowledge and understanding about the APRN's function and responsibility. Role modeling is intertwined with conceptual learning. This APRN fellowship, therefore, is focused and meaningful education where social interactions, cognitive attention, and the teaching presence of a multidisciplinary APRN teacher base create a valuable, blended educational experience for the fellow.

Overall, the literature overwhelmingly supports the development of postgraduate, post-licensure fellowships for APRNs. Despite the lack of mandated regulations and a varied consensus about the structure of APRN fellowships, current postgraduate educational programs appear to be beneficial. The cited benefits include an improved transition from novice to expert and from student to independent practitioner, bridging the clinical gaps from education to

practice, improved leadership, improved interpersonal skills, an expanded application of APRN roles, improved interprofessional competency, and an increased ease of organizational recruitment and talent retention. Due to the small number of fellowships that are currently in place, it is not possible to offer this important educational opportunity to all new APRNs. Despite lower pay for APRN fellows, there is a surplus of applicants for available fellowship programs. The surplus of applicants attests to the market's need for postgraduate APRN programs. Universal funding guidelines do not exist, and organizations may have to look for unique funding strategies to finance the fellowships. In the absence of national policy guidelines for postgraduate APRN fellowships, organizations must follow their internal assessment for curriculum development.

CHAPTER THREE. PROJECT DESIGN

Graduate APRNs face multiple challenges when transitioning to an independent practice. The challenges are valid for both the new graduates and the organizations to which the APRNs apply to work. New graduates often describe feelings of guilt and uncertainty regarding their clinical skills, the stress of finding a job in an area of interest, as well as a loss of personal control over time and privacy (Kelly and Mathews, 2001). Many potential employers, especially in a critical care setting, prefer APRNs with clinical experience in a specialty area.

Experience is difficult for new graduate practitioners to obtain. Because of the complexity of the clinical presentations and the high patient acuity in the emergency care setting, some employers may prefer to hire APRNs with primary and acute care EM experience (Dr. R. Sicoli, personal communication, May 4, 2014). Dual experience is difficult to obtain locally or nationally. Pediatric primary care APRN degree programs may have limited clinical-learning experience hours available in an acute care setting. On the other hand, acute care pediatric APRN degree programs are not readily available in Minnesota or North Dakota. The closest Midwestern pediatric acute care APRN programs are in Chicago, Illinois, and Milwaukee, Wisconsin (PNCB, 2014).

From the organizational prospective, the new graduates' transition to an autonomous practice takes time and resources. Recruitment and retention of talent has substantial costs. Hospital orientation programs are not only lengthy, but they are also costly and could cause orientation fatigue for the emergency room's personnel and preceptors. In their 2013 study, Sargent and Olmedo commented that new APRNs described feelings of being ill prepared for the high expectations of their new role caring for acutely ill patients, as well as inadequate support

and training from their physician colleagues, which results in high turnover rates for new APRNs (Sargent & Olmedo, 2013).

Advanced practice providers and physicians have similar roles in an emergency room setting. While their education differs, the requirements for clinical experience and exposure to clinical cases pertinent to the EM are similar for both physicians and APRNs. Primary care residency training does not provide sufficient experience and knowledge to be a competent emergency room physician; therefore, dual training programs in EM and family practice, as well as, EM and pediatrics were developed (Schneider et al., 2010). Unlike physicians, graduate APRN education focuses pediatrics with either primary care or acute care concentration. The knowledge and skills acquired during formal graduate education can be insufficient to support the significant degree of specialization that is often expected within an EM practice (Alexandrov, Brethour, & Cudlip, 2009). APRN fellowships in EM aim to bridge the gaps for clinical experience, education, and practice while establishing a comprehensive education program to create a successful practice transition.

When reflecting on the above-mentioned challenges, one must consider that possible solutions may originate at the institutional level. For new APRNs without previous EM or acute care experience, a hospital orientation program alone may not be sufficient to bring a provider to his/her full practice capacity within the constraints of the short orientation. To graduate well-rounded, confident, and experienced providers, a multidisciplinary clinical experience, as well as a well-rounded didactic education is required. An institution that is supportive of advanced care provider and an organizational environment where experienced advanced practice nurses can be role models for the nurse fellow are essential. Children's has modern facilities, is dedicated to

medical education, and embraces an inclusive atmosphere that is essential for APRNs. Therefore, Children's was a good choice for a pediatric EM APRN fellowship.

Project Planning

The Literature Review involved examining the Cumulative Index for Nursing and Allied Health Literature (CINAHL) and the National Center for Biotechnology Information (NCBI) databases for relevant studies. The search words were nurse practitioner, advanced practice nursing, fellowship, residency, emergency medicine, and pediatrics. The search was limited to U.S. institutions. Most publications described the need for postgraduate education programs for the APRNs, especially when the APRNs were entering highly specialized fields, such as acute care, pediatrics, and EM (Joffe et al., 2014; Schneider et al., 2010). More than 25 APRN residency and fellowship programs, in multiple specialties, were identified (Graduate Nursing Education, 2014). Few publications addressed the exact cost of establishing a fellowship or described the specific steps taken to create a fellowship program. Some programs' overall costs and outcomes were positive for the institutions (Sargent & Olmedo, 2013; Varghese, Silvestri, & Lopez, 2012).

A web-based search for the existing APRN fellowship programs was also performed. Fellowship programs vary from institution to institution. For example, John Hopkins Hospital in Baltimore, Maryland, advertised an established APRN fellowship program in gastroenterology and hepatology (John Hopkins Medicine, 2014). The John Hopkins APRN fellowship was blended with the physician's fellowship. Students in both disciplines received a comparable training experience. The Center of Advanced Practice Fellowship through the Carolina Health Care System described its fellowship in acute care, ambulatory care, and urgent care. The aforementioned program boasted of fellowships in more than 10 complementary specialties. The

program was geared towards new graduate APRNs, physician assistants (PAs), and advanced clinical practitioners who wished to change disciplines or career paths (Carolina Health Care System, 2016). The Mayo School of Health Sciences in Rochester, Minnesota, has an established fellowship program for APRNs and PAs to work in an acute care setting (Mayo School of Health Sciences, 2013).

Two well-established EM programs were discovered through the literature search. One program was at Regions Hospital in Minneapolis, Minnesota, and another one was at Carilion Clinic in Roanoke, Virginia. Both fellowships focused on adult EM and accepted both APRN and PA fellows. While several fellowships in pediatrics were identified, no pediatric EM fellowship programs for APRNs were found, establishing the need for a PEM fellowship.

Meeting with Established Fellowship Directors

The literature is deficient in research describing the steps necessary to plan, create, and implement APRN fellowships. Therefore, this writer conducted face-to-face meetings with fellowship directors from the established programs in Virginia and Minnesota. Two days were spent touring and learning about the Carilion Clinic fellowship in Roanoke, Virginia. In 2011, the Carilion Clinic successfully created a fellowship for EM for advanced care providers. This fellowship was the first fellowship of its kind in the nation. Since the inception of the fellowship program, Carilion graduated six fellowship cohorts. The Carilion fellowship utilized education, which was, dedicated to multiple specialty rotations that are pertinent to EM. The fellowship also included a robust didactic education and a reimbursement structure for the students. The fellowship was financially profitable. Outcomes from this visit are described in Appendix A.

A face-to-face interview with an advanced care fellowship director at Regions Hospital in St. Paul, Minnesota, revealed a similar, robust education pattern. In contrast to Carilion that had

a 12-month fellowship, the Regions' fellowship was an 18-month program. The fellowship was heavily focused on physician-assistant education and provided a broad surgical as well as EM experience. Both programs had a similar reimbursement structure and utilized multidisciplinary education. The didactic component included classroom instruction, pertinent certification courses, a journal club, and hospital grand rounds. Neither of the fellowships was considering national accreditation through the PA fellowship accreditation structure, and national accreditation for APRN fellowships was not available at that time. The outcomes from this interview are described in Appendix B.

Needs Assessment Survey

A needs assessment, which was directed at evaluating the feasibility of developing an APRN fellowship at Children's, was a census of APRNs practicing in the Emergency Department (ED) at Children's. The purpose of the needs assessment was to evaluate the fellowship's design and the perceived educational gaps for a newly graduated APRN who was beginning employment at Children's. The needs assessment survey is included in appendix C. The needs assessment survey had several objectives. The first objective was to assess whether the currently practicing APRNs find the proposed fellowship for EM APRNs useful and complementary to their role and clinical experience. The second objective was to identify the perceived educational and clinical gaps for APRNs who were recently employed by the Emergency Department (ED). The last objective was to answer the following question: "What should be included with the design of an in-hospital fellowship program for newly graduated APRNs in the ED"

The survey results indicated that the APRNs had varied clinical experience, varied exposure to acute care clinical time while in graduate school and varied pertinent EM experience. A quarter of providers were new graduates; a third had less than one year of EM experience; and a majority had little or no pertinent specialty cross training. The ED APRNs

recommended radiology, orthopedics, infectious disease, trauma, and dermatology as the most-requested specialties for additional cross training. The APRNs believed that 6-8 months of experience were necessary to become proficient with many common EM procedures and tasks. Some ED responsibilities required close to a year for proficiency. Overall, there was overwhelming support for an APRN fellowship. An in-depth description of the needs assessment survey is included in chapter five of this manuscript.

Identification of the Project Stakeholders

The fellowship design was a large undertaking. The needs-assessment survey results influenced the choice of the curriculum and educational materials. Planning the clinical education portion required an advanced level of scholarship and necessitated extensive and deliberate planning. The fellowship design called for the utilization of multiple Children's healthcare system resources. Developing the specialty cross-training required assistance from Children's clinical services, specialty preceptors, specialty centers, and clinics, as well as the human resources department.

Program stakeholders were identified during the first stages of the fellowship planning. Primary stakeholders included APRNs and medical doctors (MDs) who practiced at the Children's Emergency Department as well as the ED leadership. Other stakeholders included APRNs and MDs who were practicing at the specialty clinics, the managers of those clinics, and the hospital leadership. These specialty clinics included orthopedics, neurosurgery, general surgery, radiology, general pediatrics, pediatric surgery, and trauma. The fellow was scheduled to rotate through the specialty clinics as part of the fellowship's clinical-education component.

The clinical-teaching portion of the fellowship could not occur without preceptors. Therefore, identification of providers who were enthusiastic about sharing their clinical

knowledge with students was of utmost importance. Preceptors were considered education champions and were the cornerstone of the fellowship's education program. Additional stakeholders included hospital administration: the chief of staff, chief medical officer, chief executive officer, and the future fellowship director. Finally, APRN students and faculty from local APRN programs were considered for inclusion with the fellowship planning. However, partnership with local universities was differed until the program was established.

Input from the stakeholders molded this fellowship program's design, including the collaboration with specialty clinics. Multi-disciplinary collaboration for designing and implementing the fellowship programs was described as a cornerstone of successful program development (Corbridge, Tiffen, Carlucci, & Zar, 2013). Partnership with the Children's specialty clinics provided a diverse and collaborative, multi-disciplinary education plan for the fellowship.

Project Proposal and Completion Timeline

In April of 2013, the proposed project was presented to a dissertation committee at North Dakota State University (NDSU) and the project received approval. The project was then presented to the NDSU Institutional Review Board (IRB) and, which granted approval. The fellowship plan was also presented to the Children's IRB board, and no institutional conflicts were identified. In April of 2014, the project plan was presented to the Emergency Department's leadership. The next step was the needs-assessment survey, as discussed above. After the needs-assessment survey was completed, the final fellowship plan was revised to reflect the results of the needs assessment.

Both the ED APRN Lead and the ED Medical Director participated in the first proposal meeting. The project plan was revised to include the leadership's input. The ED leadership

recommended to present the fellowship proposal to the hospital's Director of Fellowship Development.

The Director of Fellowship Development received the fellowship plan in June of 2014. The Director expressed confidence in the strength of the proposed fellowship model, and pledged office and personnel support for the process of fellowship advancement. The fellowship plans were revised, and work on the clinical modules and curriculum was initiated. The process of identifying the clinical sites and preceptors was started.

In August of 2015, the fellowship plan was presented to the hospital's leadership. During the hospital leadership's meeting, the ED APRN Lead, ED Medical Director, Children's Director of Fellowship Development, Chief Medical Officer, and Chief Financial Officer were present. The fellowship plan received overwhelming support, especially in the areas of clinical excellence, staff development, and national recognition. Areas of concern were also identified. One major concern was the projected financial burden on the Emergency Department. In addition, the ED leadership expressed a preference for the fellowship director to have close ties with the ED. Close ties to the ED and at least part time ED APRN clinical hours would assure that the fellowship director is a fully integrated ED team member. Unfortunately, the writer recently vacated her ED APRN position and transferred to pediatric trauma. The writer could not be considered for the ED APRN leadership. The project received conditional approval.

The fellowship plan was then revised, and the clinical-module and curriculum work was continued. In late 2015, the fellowship director position was defined by the leadership, posted, and then quickly filled by an internal candidate. The fellowship-development work was turned over to the fellowship director. The writer continued to serve in an advisory capacity to the fellowship director.

Congruence of the Project with the Organization's Strategic Plan

Children's is one of the largest pediatric healthcare systems in the United States. Children's is the only care system in Minnesota that is dedicated exclusively to pediatric patients. Children's mission is to "champion the special health needs of children and their families" (Children's Hospitals and Clinics of Minnesota, 2014). The hospital is committed to improving children's health by providing high-quality, family-centred pediatric services. Advancing these efforts through research and education fits directly with the fellowship goals. Educating future healthcare providers, retaining high-quality staff to promote advances in healthcare, and focusing on a family centred approach are congruent with this fellowship project's goals.

Children's' vision is to be a national leader for advancing the health of children as well as innovating and delivering family centred care of exceptional quality (Children's Hospitals and Clinics of Minnesota, 2014). The fellowship fit the organizational vision for advancement and innovation. There are currently no APRN fellowships that focus on pediatric EM and becoming a national leader in this area fit well with the organization's goals.

Project Design

This EM fellowship for APRNs was designed around the educational opportunities and clinical services that are available at Children's. Both the program's design and educational goals were guided by the results of the needs-assessment survey and were individualized to each nurse fellow's educational needs. The clinical-rotation schedule was influenced by the seasonal staffing pattern at the Children's ED and by the seasonal schedules at Children's specialty clinics. For example, the trauma and orthopedic clinics have the largest patient volume in the summer months; therefore, those specialty rotations were scheduled for the summer. Typically,

ED patient volumes increase in the winter months; therefore, the core emergency curriculum was planned for the winter. The curriculum content was influenced by the new APRNs' overall educational needs and by the results of the needs-assessment survey. The financial structure of the fellowship and a fellow's reimbursement guided the length for the clinical experience at each site.

The fellowship was designed to accept one APRN fellow per year, starting in June and following graduation. The application process would have included an on-line application, a written essay, and review of the candidate's personal references. Preference would be given to candidates with a history of academic excellence, interest in pediatric emergency medicine, and strong ties to Minnesota. The APRN fellow would start the program with a new cohort of PEM fellows. Furthermore, the APRN fellow would have joined the PEM fellows for weekly meetings, journal club, and weekly grand rounds. The combination of APRN and PEM fellows would promote a sense of community and decrease the isolation associated with postgraduate education.

Fellowship Structure

As seen in the needs-assessment results, the APRNs became comfortable with most EM skills and procedures after 10 months of job experience (Figure 10). The more complex EM skills would require 15-20 months of direct patient experience for proficiency. Therefore, it was extrapolated that fewer than 12 months for a fellowship would not be sufficient for skill proficiency. Other institutions, including EM fellowships for advanced care providers at both the Carilion Clinic in Roanoke, Virginia, and Regions Hospital in Minneapolis, Minnesota, utilized a 12-month fellowship structure. Therefore, the total length for the fellowship training was determined to be 12 months.

The needs-assessment survey's results indicated that providers considered additional specialty-clinic experience that was dedicated to specific practice areas to be essential for competent pediatric care in the ED. The recommended practice areas included pediatric orthopedics; pediatric ear, nose, and throat (ENT); pediatric general surgery; pediatric trauma; and radiology.

To accommodate for the above-mentioned specialty rotations, the fellowship was divided into two phases: 4 months of specialty rotations and 8 months for the core EM rotation. Specialty-clinic rotations were planned to last 1-2 weeks, depending on the specialty. One-day specialty courses, including certification courses pertinent to the pediatric emergency-department setting, were included with the initial phase. The certification courses included Pediatric Advanced Life Support (PALS), procedural sedation, nitrous-oxide administration, splinting, and advanced suturing and wound management. Children's offered these courses free of cost to the nurse fellow.

The APRN fellow was directed to apply for hospital privileges through the hospital credentialing process. Hospital privileges included core APRN privileges and payer billing credentialing. The hospital privileges allowed the APRN fellow to practice in the Emergency Department during the fellowship's main phase. Billing credentials allowed the hospital to be reimbursed for services rendered by the fellow. The APRN fellow was required to maintain a valid Minnesota APRN license, and in the case of a new graduate APRN fellow, a one-year practice agreement with a collaborating physician was needed.

The plan required that the APRN fellow be paired with an ED APRN clinical preceptor for most of the initial training. Gradually, the APRN fellow was expected to start caring for patients independently, using an experienced clinician as a backup. The APRN fellow was

scheduled for both low-acuity and high-acuity areas in the Emergency Department. During the high-acuity rotations, the APRN fellow was paired with a board-certified physician as a backup. During the specialty rotations and the core Emergency Department training, the APRN fellow was expected to build upon previously gathered knowledge, to gain valuable experience, and to provide excellent patient care that fit Children's vision and mission. The APRN fellow's sample schedule is provided in Table 1.

Fellowship Reporting Structure

Both the fellowship director and the senior APRNs who were working in the Emergency Department planned to share key roles for the fellowship's development. The fellowship director's responsibilities included the initial planning for the fellowship structure, coordinating the education experience between the specialty clinics and the Emergency Department, developing curriculum, and identifying the staff members who were willing to be fellowship-education champions and preceptors through the specialty clinics. The senior APRNs provided input for developing the fellowship curriculum and planned to serve as educational champions and clinical preceptors for the fellow. The fellowship director worked closely with the Emergency Department's chief of staff and with the specialty clinics' managers to create cohesive and educationally fulfilling rotations for the APRN fellow. The fellowship director planned to assist the future APRN fellow with his/her credentialing process at Children's.

Table 1

Sample Yearly APRN Fellowship Schedule

Week	Activities	Specialty Courses
	June	
Week 1	Hospital orientation, credentialing application, mandatory hospital in-services, and EMR training	PALS BLS
Week 2-3	Low-acuity emergency medicine	
Week 4	Orthopedics	
	July	
Week	Low-acuity emergency medicine	Procedural sedation
Week 3-4	Pediatric trauma	
	August	
Week 1	Radiology	
Week 3-4	Dermatology General pediatrics or elective	
	September	
Week 1	Anesthesia	Intubation lab Mild and moderate sedation Operating room
Week 2	Pain and palliative care 1 day of Child Life	
Week 3-4	General surgery	
	October	
Week 1	Dead week or vacation	
Week 2	Elective specialty	Microbiology and positive culture follow-up
Week 3-4	Low-acuity emergency medicine 1-day concussion clinic	
	November	
Week 1-2	Low-acuity emergency medicine	EM procedures Wound management and suturing
Week 3	Infectious Disease rotation	
Week 4	Ear nose and Throat (ENT)	
	December	
Weeks 1-4	Low-acuity emergency medicine	Nitrous-oxide provider course
	January	
Weeks 1-4	High-acuity emergency medicine	Optional: ATLS
	February through May	
Weeks 1-4	Emergency medicine and graduation	

Note. Mandatory weekly Grand Rounds and the monthly Journal Club meeting are not included with this sample schedule.

Fellowship Director Qualifications

Job qualifications for the fellowship director were delineated in collaboration with the EM APRNs, the Emergency Department's management, and Children's Director of Fellowship Development. Because the fellowship director was required to manage and plan the APRNs' education, an APRN degree was required for the director position. Other job qualifications included experience with the Children's health system, experience in an EM field, and experience managing APRNs. Knowledge about the current APRN educational guidelines was essential. The fellowship-director position was posted internally and was filled by an internal candidate. The fellowship director reporting structure is delineated in Figure 1.

APRN Fellow Qualifications

Qualifications for the incoming fellow were delineated in collaboration with the Emergency Department's leadership staff and the APRNs. A successful candidate needed to have a degree from an accredited pediatric primary care or pediatric acute care NP program, to hold a national certification, and to possess an unencumbered Minnesota APRN license. Physician assistants (PA) were excluded from the program due differences with the education, certification, and credentialing requirements. Preference was given to applicants with acute-care experience and providers desiring a career in pediatric EM. Ideally, the applicant would have Minnesota ties and would be interested in remaining in the Midwest after fellowship completion.

A non-discrimination clause was included in the APRN fellow's job description. Children's is an equal-opportunity employer. The affirmative-action policy ensures that Children's employment practices are free of discrimination in accordance with all applicable equal-employment opportunity, affirmative-action laws; directives; and regulations for the federal, state, and local governing bodies or agencies. The policy ensures that Children's

recruitment and selection process includes measures to attract qualified minorities, women, and disabled employees at all levels within the organization (Children's Hospitals and Clinics of Minnesota, 2013).

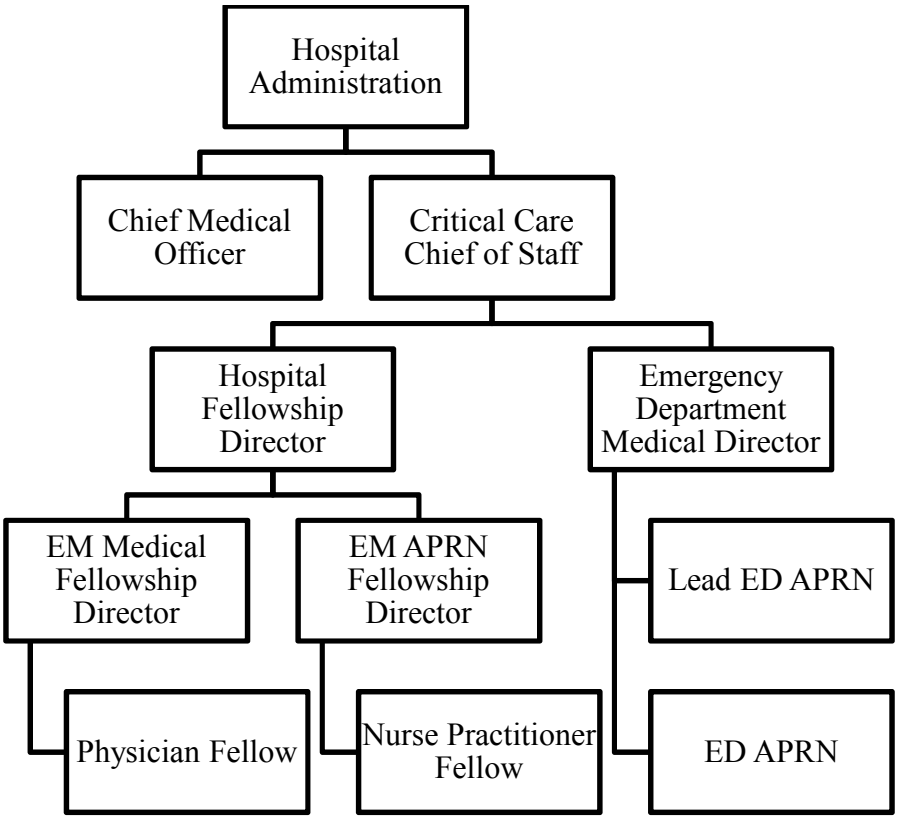

Figure *1*. Fellowship Reporting Structure.

Fellowship Program Cost and Reimbursement

The cost of the fellowship program and the financial reimbursement of the APRN fellow were delineated during the program's planning stages in collaboration with the Emergency Department's Medical Director. The plan was to reimburse the fellow using the existing medical model for national MD fellowship reimbursement. Usually, physician fellows or residents are paid a fraction of their future salary, in exchange for education and clinical experience. The APRN fellow's salary was approximately 35% lower than the market rate for a graduate APRN. Other institutions, including Virginia's Carilion Clinic, used a similar reimbursement model

(Fellowship Director, personal communication, November 19, 2014). Post-fellowship, the APRN's starting salary was expected to be higher than the average salary for a new APRN without fellowship training. Therefore, the APRN fellows were expected to recoup the initial salary loss during the next five years of employment (Fellowship Director, personal communication, November 19, 2014).

In contrast to a physician fellow or a resident who is unable to practice independently, an APRN fellow is a fully licensed graduate of an APRN program who can practice with a supervisory agreement. Minnesota's Board of Nursing requires a recently graduated APRN to obtain a practice agreement with a collaborating physician for his/her first 2,080 hours of practice. The ED Medical Director would fill the collaborating physician's role.

National certification and state licensure allow for practice and third-party billing. After completing the initial credentialing requirements, the APRN fellow would bill for services in a comparable manner, as other providers. In contrast to a physician fellow, the APRN fellow would be able to produce revenue for the department and the institution. The revenue generated by the APRN fellow would help supplement the fellowship program's cost. By estimation, the APRN fellow could bill for eight of the 12 months during the fellowship training. Direct billing was thought to make the fellowship financially self-sufficient.

The APRN fellow would be a fully credentialed member of the professional staff and, therefore, would be privy to employee benefits. To stay with fair-market guidelines, a new position was created specifically for the APRN fellow. The position description defined the APRN fellow's reimbursement guidelines, job requirements, and responsibilities. The APRN fellow would be a full-time employee at Children's and would be required to attend all pertinent orientation, training, and background screenings. This process, called onboarding, would be

completed during the fellowship's first week. The APRN fellow would receive hospital security access, electronic medical records (EMR) training, and patient chart access. The fellow would not be allowed to prescribe or to provide care for clients independently until the credentialing process was completed. This task usually takes 3-4 months. Therefore, the specialty rotations were scheduled at the beginning of the fellowship. By the time fellow was expected to complete the specialty rotations and return to the ED full time, the credentialing process would have been completed.

While Children's retained the ability to offer the fellow a position if one became available, employment was not a guarantee with a successful fellowship completion. This rule was created as a safeguard in case of a poorly matched candidate, the lack of employment availability, or the completion of an unsuccessful rotation.

The Fellowship Budget

The fellowship cost included direct reimbursement for the fellowship director and the APRN fellow as well as indirect overhead expenses. The overhead expenses included recruitment fees, advertising, and general office-management costs. The fellow was considered a full-time employee, which equaled to 40 hours per week or 1.0 full-time equivalent (FTE). The APRN fellow position was allocated 0.9 FTEs. Another 0.3 FTEs were dedicated to the program's management. The program's operational revenue was going to be augmented by the reimbursement obtained from the patient-care visits that were billed by the fellow. Table 2 shows the fellowship cost in FTEs. The costs are offset by the revenue projections, which come from the fellow's billable hours during the training.

Table 2

Cost of the APRN Fellowship in FTE

Cost and Revenue	Cost (FTE)	Revenue (FTE)	Total Cost
APRN fellow's salary and benefits	1.0		
Program director's salary and benefits	0.2		
APRN fellow's salary (30% market reduction)		0.3	
Billing and procedural revenue		0.75	
Staff recruitment and advertisement		0.1	
Total	1.2	1.15	0.05

Note. *Full-time equivalent (FTE)*

In Minnesota, the average market rate for a newly graduated APRN who practiced in an EM specialty was reported as $95,000 per year (Children's Human Resources, personal conversation, May 2016). Therefore, the APRN fellow's reimbursement was $62,000 per year. The total loaded rate, or the total cost for each hire at the institution, was estimated to be 40% above the base salary. Therefore, the APRN fellow's salary would cost Children's about $80,800 per year. There was a precedent for similar reimbursement rates for medical fellowships. According to the jobs and recruiting web site Glassdoor, average medical fellow salary is about $61,133 (Glassdoor, 2016). In return for a lower reimbursement rate, the fellows received valuable education and experience that hopefully would improve their future employment prospects, clinical competence, and base salary.

The fellowship director's budgeted salary was estimated to be approximately $40,000 per year. The clerical office cost was estimated to be $10,000 per year. Overall, the fellowship's total cost to the organization was estimated to be $130,000 per year. When adjusted with the projected fellowship's income, the total cost was estimated to be 0.05 FTE (about $5,000).

Fellowship Curriculum

Long-standing, post-baccalaureate registered nurse residency programs have nationally recognized curriculum as well as program evaluation and certification methods. At the start of this project, there was not a nationally recognized certification for the new APRN's post-graduate programs (Sargent & Olmedo, 2013). The curriculum for acute-care APRN fellowship programs is center specific and utilizes varied educational approaches that are organization specific (Carolina Health Care System, 2014). For example, one fellowship program, NET SMART, was modeled after physicians' fellowship training. The program utilized on-line education and clinical curriculum approved by the Accreditation Council for Graduate Medical Education (Alexandrov et al., 2009). In contrast, both the Carolina Health Care System and the Carilion Clinic utilized input from staff, needs-assessment surveys, and job-satisfaction surveys when developing institution-specific fellowship programs (Carilion Health Care System, 2014). Utilizing collaborative efforts from senior emergency-department APRNs and three local pediatric APRN program directors, Children's Hospital of Philadelphia (CHOP) developed a pediatric emergency APRN fellowship program (Varghese, Silvestri, & Lopez, 2012).

Children's Hospitals and Clinics APRN fellowship curriculum was composed of three parts: specialty rotations or modules, pertinent certification courses, and the EM rotation. All the modules had didactic and clinical components. The didactic component included pertinent readings, PowerPoint presentations, and posttests. The didactic portion was expected to be completed before starting the clinical component. The clinical component included rotations in the emergency department and in specially clinics. Pertinent certification courses included Pediatric Life Support (PALS), Basic Life Support (BLS), wound management and suturing,

nitrous oxide administration, and procedural sedation. Children's offered these courses at no cost to the fellow.

In response to today's increasingly technological demands of high-paced medical education, each module utilized multiple instructional methods. Hybrid or blended instructional methods included self-directed reading, online clinical research, hands-on clinical experience, specialty classes, and clinical labs. Each module's lesson plan was developed in collaboration with APRNs from each specialty.

For the clinical experience, the fellow would partner with multiple specialties, creating an interdisciplinary learning environment. For example, Children's orthopedic service delivered the orthopedic clinical experience. An orthopedic PA and an orthopedic surgeon served as the preceptors. The anesthesia and pain module were developed in collaboration with Children's Certified Registered Nurse Anesthetist (CRNA) group. Involving multiple disciplines, where preceptors could be an APRN, a PA, or an MD, was considered paramount for the development of a well-rounded professional. APRNs were described as full partners with physicians; linked in the tasks of redesigning modern healthcare and working together with the common goal to improve patient outcomes (Institute of Medicine, 2011). An example specialty module is in Appendix D, and an example clinical schedule for the orthopedic rotation is shown in Table 3.

Table 3

Example of a Clinical Schedule for an Orthopedic Rotation

Activity Description	Meeting Location
Required reading: Mencio & Swiontkowski (2014), chapters 1, 2, 6, 8, and 12 Complete PowerPoint presentations and online case scenarios	
Monday	
Pediatric orthopedic rounds Upper-extremity injury: pre-operative and post-operative assessment.	Unit 6100 OR
Tuesday	
Lower-extremity Injury Emergent presentations of orthopedic injuries	Unit 6100 ED
Wednesday	
Pain control in orthopedics Operating room and inpatient experience Outpatient orthopedic care and clinic	Unit 6100 OR Clinic: basement
Thursday	
Pediatric orthopedic rounds Pediatric Grand Rounds Operating -room experience and inpatient care of pediatric patients Patient teaching, discharges, and anticipatory guidance Progress evaluation	Unit 6100 2nd Floor Conference OR/Unit 6100 Ortho office
Monday	
Pediatric orthopedic Rounds Non-accidental trauma Operating-room experience and inpatient care	Unit 6100 OR
Tuesday	
Care coordination: from admission through inpatient care to discharge Pediatric orthopedic Emergencies	Unit 6100 ED
Wednesday	
Operating room experience and inpatient care Outpatient orthopedic care and clinic	OR/Unit 6100 Specialty Center
Thursday	
Orthopedic rounds Pediatric Grand Rounds Operating-room experience and inpatient care. Patient teaching, discharges, and anticipatory guidance Exit meeting and evaluation	Unit 6100 2nd Floor Conference OR/Unit 6100 Ortho call room

Notes. Operating Room (OR), Unit 610 is a patient care unit.

CHAPTER FOUR. EVALUATION

Evaluation of the APRN fellowship was an integral part of the program's development. The program evaluation was divided into three sections. The first section included an evaluation of teaching effectiveness. Second, the APRN fellow's clinical competency was evaluated with skills testing and the completion of the 360-degree assessment. Preceptors, medical staff, and the fellowship director were responsible for the fellow's clinical evaluation. Finally, the program's effectiveness was evaluated by assessing the APRN fellow's marketability after the fellowship completion. Marketability can be measured by the ability to secure a job in the area of expertise, or by a comparing APRN fellow's post fellowship salary to the salary of a new graduate. The fellowship's leadership changed prior to when this manuscript was written, and there are no concrete data about the program evaluation. Therefore, the following discussion describes the planned program evaluation.

Evaluation of the Fellowship

Program evaluation and outcome assessment are important components of a program's development. First, the APRN fellow is directed to submit an evaluation of the clinical experience for each specialty rotation site. Rating the quality of the clinical experience, teaching effectiveness, and preceptor responsiveness is part of the evaluation. Assessment includes clinical training, faculty attributes, and didactic attributes. The initial fellowship plan had monthly reviews of the APRN fellow's experience, which are performed by the fellowship director. Program-improvement strategies can be modified depending on the results of each monthly evaluation.

Second, program effectiveness, as it relates to the APRN fellow's success after program completion, is measured. An interview six-month post-fellowship could be used to measure program effectiveness. The APRN fellow job success can be evaluated using a questionnaire

format. Assessment can include APRN satisfaction with the new employment, ease of transition, salary range, and need for additional clinical support.

Multiple tools have been developed for similar fellowship evaluations. The Alliance of Academic Internal Medicine (AAIM) lists the Annual Confidential Evaluation of Fellowship Training Program, which was developed by the Northwestern University Feinberg School of Medicine. This tool (shown in Figure 2) was adapted and modified to fit the needs of this fellowship.

APRN Fellow Evaluation

The program's outcome assessment is evaluated by directly observing the APRN fellow's performance, interpersonal skills, and clinical and didactic knowledge skills. The APRN fellow's evaluation included a direct assessment of clinical skills, a 360-degree feedback assessment, posttests after module completion, and retrospective chart reviews. The APRN fellow's evaluation is the responsibility of the specialty clinical preceptors. At the completion of the fellowship, APRNs clinical abilities are evaluated by assessing perception of job readiness, clinical skills, self-assessment of clinical competence, and satisfaction with the provided education.

A 360-Degree Assessment

A 360-degree assessment is a comprehensive evaluation tool that is used to evaluate student performance and progress in an educational program. The assessed attributes include personality characteristics, professionalism, and interpersonal and communication skills. Several 360-degree feedback tools have been developed by medical fellowship programs (Alliance of Academic Internal Medicine, 2016). Many institutions use their own versions of the tool. For example, the University of Minnesota (U of M) Hematology Oncology fellowship program

ANNUAL CONFIDENTIAL EVALUATION OF FELLOWSHIP TRAINING PROGRAM

Please evaluate your training program, based on your experiences during this past year. Your feedback is very important to the continuous quality improvement of Northwestern's fellowship programs.

Rating Scale: N/A Not applicable; Poor (1); Fair (2); Good (3); Very Good (4); Excellent (5)

I. CLINICAL TRAINING:

1. Quality and diversity of pathology seen	N/A 1 2 3 4 5
2. Learning value of attending rounds	N/A 1 2 3 4 5
3. Adequacy of faculty supervision	N/A 1 2 3 4 5
4. Quality of faculty supervision	N/A 1 2 3 4 5
5. Quality and timeliness of feedback from faculty members	N/A 1 2 3 4 5
6. Opportunity to perform required procedures	N/A 1 2 3 4 5
7. Appropriateness of workload	N/A 1 2 3 4 5
8. Collegiality of your peers	N/A 1 2 3 4 5
9. Overall quality of clinical rotations	N/A 1 2 3 4 5
10. Are clinical rotations organized for education as opposed to meeting service needs?	Never Sometimes Always

If yes, how could the program address this? Please explain.

II. RESEARCH TRAINING

1. Time devoted for research	N/A 1 2 3 4 5
2. Quality of research mentoring	N/A 1 2 3 4 5

Please provide additional comments about your research training.

IIII. FACULTY ATTRIBUTES:

1. Availability/Reliability	N/A 1 2 3 4 5
2. Quality of teaching	N/A 1 2 3 4 5
3. Commitment to teaching	N/A 1 2 3 4 5
4. Behave in an appropriate manner	N/A 1 2 3 4 5
5. Promote scientific discovery	N/A 1 2 3 4 5
6. Inspire me to pursue a career in academic medicine	N/A 1 2 3 4 5

Please provide additional comments about the faculty in your program

IV. TEACHING CONFERENCES:

Please rate the quality of the teaching conferences listed below

1. Grand Rounds	N/A 1 2 3 4 5
2. Core Curriculum Lectures	N/A 1 2 3 4 5
3. Journal Club	N/A 1 2 3 4 5
4. Research Seminars	N/A 1 2 3 4 5

VI. GENERAL COMMENTS

If there are topics not listed above that deserve special recognition or require improvement, please comment below.

Thank you for taking the time to complete this survey.
We appreciate your feedback.

Last updated
11-2008

Figure 2. Annual confidential evaluation for the APRN fellowship. (Alliance of Academic Internal Medicine, 2016).

provides fellows with feedback on communication skills, interpersonal skills, and professionalism (University of Minnesota, 2014). The U of M 360-degree assessment tool was adopted and modified to fit this program's needs. The 360-degree assessment tool is shown in Table 4.

Skills Competency Assessment

Direct assessment of the skills for each clinical-practice area pertinent to the EM training is done by clinical preceptors. The tested skills include suturing, splinting, simple abscess incision and drainage, culture follow-up and infection treatment, and laboratory interpretation. The fellowship curricula guided the creation of the assessment tools pertinent for evaluation. Tables 5, 6, and 7 include examples for the clinical-competence assessment tools that can be used to evaluate skill competency.

Table 4

Sample Fellow Evaluation Form

Fellow: _____ Date_____

Evaluator's role: MD__ APRN___ PA____ Fellow____ Other_____

For each number, circle the number that corresponds with how characteristic the behavior is of the fellow you are evaluating.

Professionalism	Not at all characteristic		Highly characteristic		Don't Know
Follows on task agreed	1	2	3	4	DK
Responds to requests and pages promptly	1	2	3	4	DK
Knows own limits, asks for help when needed	1	2	3	4	DK
Takes responsibility for actions and admits mistakes	1	2	3	4	DK
Makes patient care and well-being a priority	1	2	3	4	DK
Provides equitable care regardless of a patient's culture and socioeconomic status	1	2	3	4	DK
Is willing to act on feedback or other information to improve patient care	1	2	3	4	DK
Maintains respectful demeanor in demanding and stressful situations	1	2	3	4	DK
Is honest in interactions with others	1	2	3	4	DK
Takes on extra responsibilities when the need arises	1	2	3	4	DK
Interpersonal and Communication Skills					
Easily establishes rapport with patients and their families	1	2	3	4	DK
Is respectful and considerate when interacting with patients	1	2	3	4	DK
Responds to patients' needs, feelings, or wishes	1	2	3	4	DK
Uses non-technical language when counseling	1	2	3	4	DK
Spends an adequate amount of time with patients	1	2	3	4	DK
Is willing to answer questions and to provide explanations	1	2	3	4	DK
Is courteous to and considerate of nurses and other staff	1	2	3	4	DK
Discusses patient issues clearly with staff and faculty	1	2	3	4	DK
Listens to and considers what others have to say about relevant issues	1	2	3	4	DK
Maintains complete and legible medical records	1	2	3	4	DK

Notes. Don't Know (DK)

Modified from: University of Minnesota (2014)

Table 5

Microbiology Culture Follow-up Competency

Microbiology Culture Tasks	Dates completed	Dates completed	Dates completed	Dates completed	Dates completed
Completion of training module					
Completion of a posttest					
Culture follow-up performed with a preceptor					
Culture follow-up preformed independently (preceptor available for reference)					

Note. Culture follow-up is a daily task requirement for an ED APRN.

Table 6

Suturing Proficiency Competency

Suturing Proficiency Tasks	Date MR#	Date MR#	Date MR#	Date MR#	Date MR#
Suture-class completion					
Practice-lab completion					
Simple repairs with a preceptor					
Layered wound repair with a preceptor					
Simple repairs performed independently					
Layered wounds performed independently					
Suture credentialing completed					

Note. Each interaction is documented by using a medical record number (MR#). Thorough documentation allows for appropriate follow-up.

Theoretical Framework and Evaluation Method

Both the Diffusion of Innovation Theory by Rogers and the Community of Inquiry theoretical framework of Peirce and Dewey directed the fellowship's evaluation strategies. The fellowship's clinical preceptors function as early adopters and impart the high standards of clinical education that are needed for successful program progression. Organizationally, Children's already maintained high standards for clinical education through medical fellowships

and APRN educational programs. High educational standards for the fellowship curriculum were achieved by involving clinical preceptors in the development of education materials.

Table 7

Splinting Proficiency Competency

Splinting Proficiency Tasks	Date MR#	Date MR#	Date MR#	Date MR#	Date MR#	Date MR#
Ortho-Glass class completion						
Practice-lab completion						
Upper extremity splinting with a preceptor						
Lower extremity splinting with a preceptor						
Upper extremity splinting performed independently						
Lower extremity splinting performed independently						
Splinting credentialing completed						

Notes. Medical record number (MR#).

The evaluation process identifies specific questions and variables to include for the evaluation, examines the implementation, and addresses relevant contextual factors in search of positive or negative patterns (Rogers, 2014). The impact evaluation assesses the program's effectiveness by addressing the success or failure among the casual paths of implementation. Teaching effectiveness is evaluated for quality, relevance, and reproducibility. If the presented material needs improvement, the theory choice or implementation failure must be considered.

The Community of Inquiry theoretical framework addresses educational outcomes by identifying the social presence, cognitive presence, and teaching presence (Center for Teaching and Learning, 2016). Social presence is established by supporting the teaching and learning outcomes; role modeling the clinical, social, and cognitive skills; and supporting the APRN fellow's transition to an independent practice. The social presence's effectiveness can be identified with the 360-degree evaluations and with the skill assessments discussed earlier in this chapter. Teaching presence is achieved by designing and developing educational materials. It

can be assessed by administering clinical-competence evaluations, attending the required certification courses, and participating in weekly grand rounds and journal clubs. Together, the social, teaching, and cognitive presence creates an optimal educational experience that is necessary for the APRN fellow's successful progression. A successful fellowship-program evaluation includes assessing the teaching's effectiveness, the curriculum's applicability, the APRN fellow's performance, the clinical sites' quality, and the preceptorship's quality.

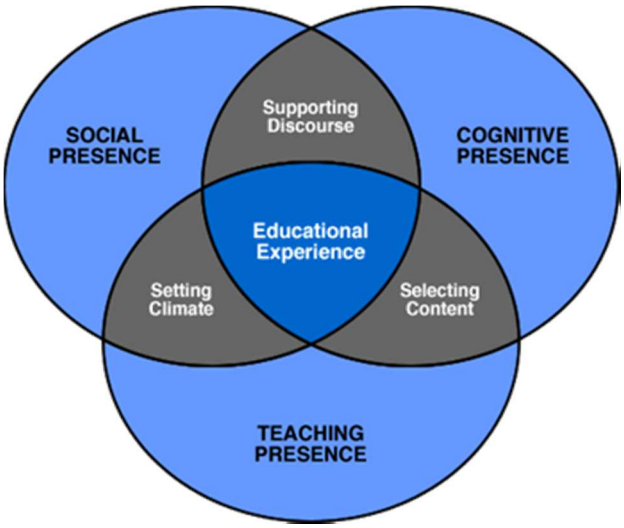

Figure 3. Relationship among social presence, cognitive presence, and teaching presence in the community of inquiry theory. *Adapted from the Center for Teaching and Learning* (2016).

CHAPTER FIVE. RESULTS

The needs assessment survey, which was administered to the ED APRNs, had three main objectives. The first objective was to assess whether currently practicing ED nurse practitioners (NPs) find the fellowship for APRNs in emergency medicine useful and complementary to their role. The second objective was to describe possible educational gaps for NPs who recently started their practice in emergency medicine. The third objective was to answer the following question: "What should be included with the design of an in-hospital fellowship program for APRNs"? No assessment tools applicable to the project was available, therefore an original assessment tool was developed.

Needs Assessment Survey Results

The confidential needs-assessment survey was census administered in the form of a questionnaire to ED APRNs. There were 12 APRNs practicing at Children's Emergency Department (N=12), and they all participated in the survey. The questionnaire gathered information about the NPs' previous clinical experience, their procedural comfort levels, their desires and needs for continual education, and their preferred education-delivery methods. Both quantitative and qualitative data were gathered. The participation rate was 100%. All APRNs held a national certification in acute care or primary care pediatrics, and some APRNs held a dual certification in primary care pediatrics and acute care pediatrics.

The writer obtained approval from the North Dakota State University (NDSU) Institutional Review Board (IRB) and the Children's administration. The survey results were confidential, and no unique identifiers were gathered from the respondents. Participation was voluntary, and no monetary or other benefits were provided. APRNs, who answered "yes," agreeing to take the survey, were considered as giving their consent for participation. The

survey did not evaluate APRNs effectiveness or competence level. The survey did not evaluate the effectiveness of the current ED orientation process.

Experience

While many APRNs had more than 3 years of clinical experience, five respondents had practiced for fewer than 3 years. One APRN was a recent graduate, two had less than a year of APRN experience, and two had practiced between 1 and 3 years. Overall, the APRNs' experience level is summarized in Figure 4.

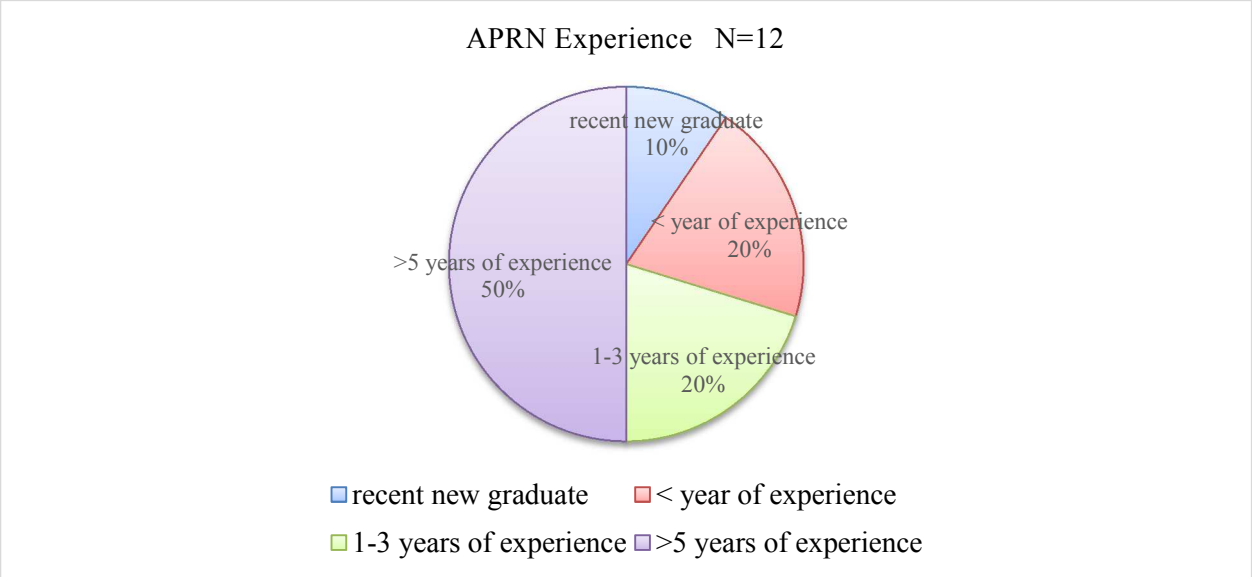

Figure 4. Length of total experience for ED APRNs.

Next, ED experience was assessed. A quarter of the APRNs had less than 1 year of ED experience. Sixteen percent of the APRNs had worked in an ED for 1-3 years, and almost half of the APRNs had three or more years of ED experience. In addition, slightly more than half of the APRNs (n=7) had a registered nurse (RN) ED experience prior to or during their graduate training. Less than half (n=5) had not have any ED experience prior to working at Children's. ED experience during graduate training was equally divided. Six APRNs had clinical or practical experience in the ED (50%), and another six did not (50%).

Exposure to specialty training differed among the participants. For example, half of the APRNs had some form of orthopedic training as part of their education while half did not (n=6). Only four APRNs had exposure to general surgery (33%). Many APRNs had some form of acute care experience (n=10 or 83%) while two (n=2 or 16%) had no acute care experience. Specialty experience during the APRN training is summarized in Figure 5.

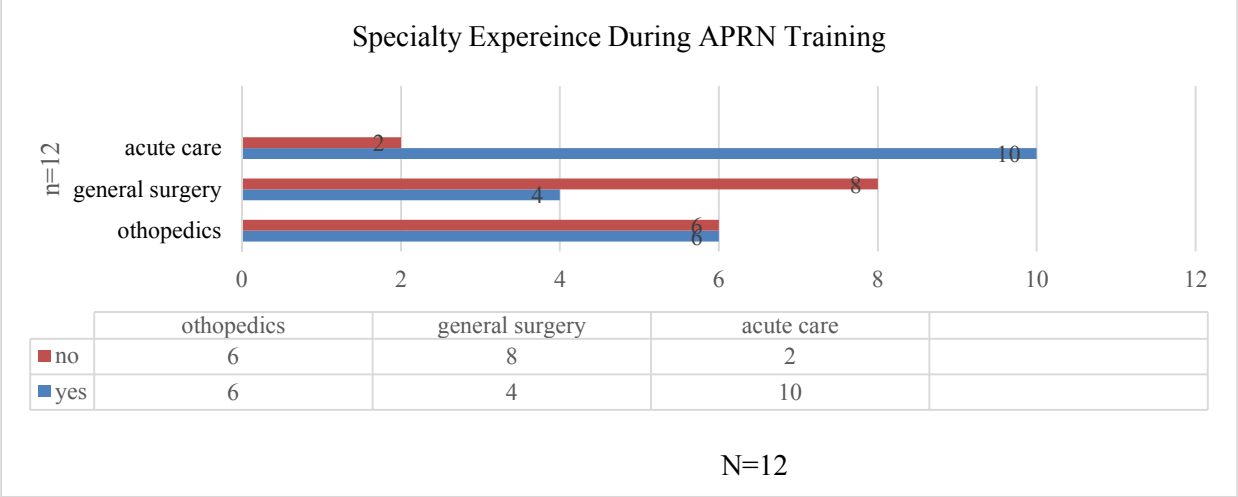

Figure 5. Prior specialty experience for the ED APRNs.

Level of Comfort with ED Procedures

Participants were asked questions about their comfort level for managing surgical orthopedic patients and for performing simple and complex laceration repairs. The participants were also asked how long it took them to become comfortable with splinting independently (Figure 6). While two APRNs felt comfortable splinting with fewer than 4 months of training, the majority of the APRNs (n=10) felt that they needed more educational opportunities in this area.

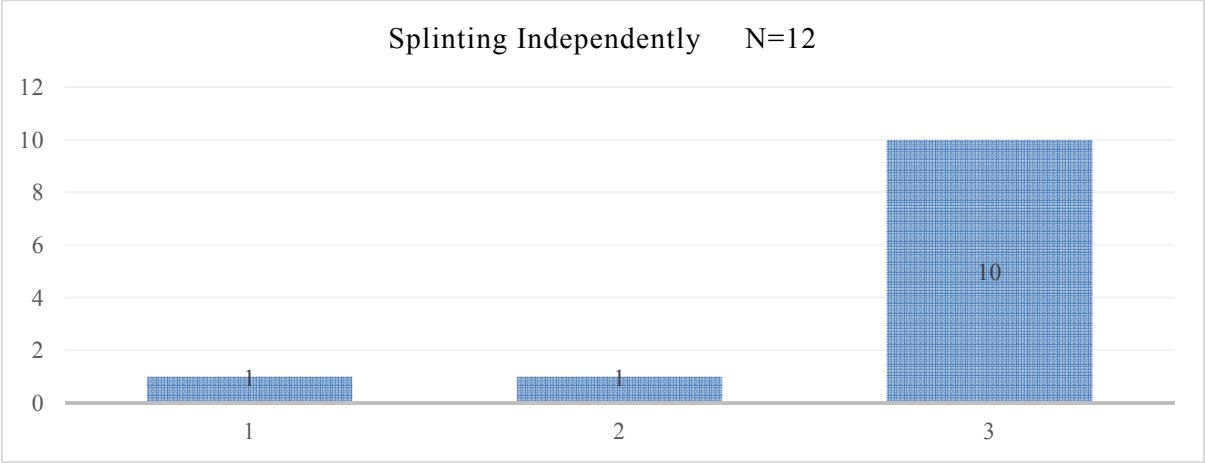

Figure 6. ED APRNs' training time for proficiency to place splints independently.

Half of the APRNs were seeking additional educational opportunities in orthopedics (Figure 7). Slightly less than a quarter of the Providers (n=3) felt comfortable after about 4 months of practice while slightly more than a quarter of the APRNs (n=4 or 33%) felt comfortable after about 6 months of practice.

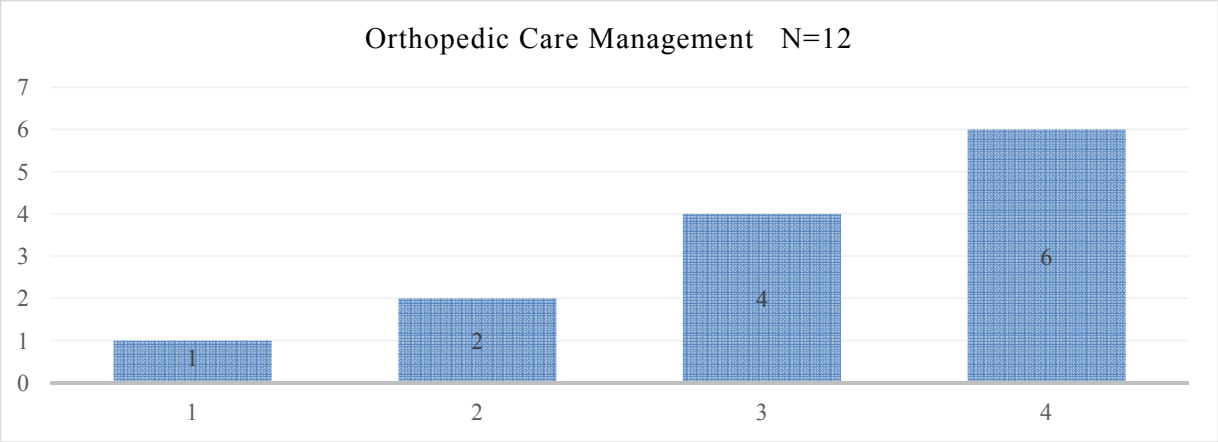

Figure 7. ED APRNs' training time for proficiency with orthopedic-care management.

Some APRNs estimated that they became proficient suturing simple wounds independently after how many months of practice while about a third of the APRNs (n=4) wanted more educational opportunities in this area (Figure 8). In contrast, none of the APRNs felt comfortable suturing complex and facial wounds independently after 4 months of practice.

Proficiency with the skills to suture complex and facial wounds took an average of six months (n=5 or about 42%); seven APRNs (n=7) wanted time for additional educational opportunities (Figure 9).

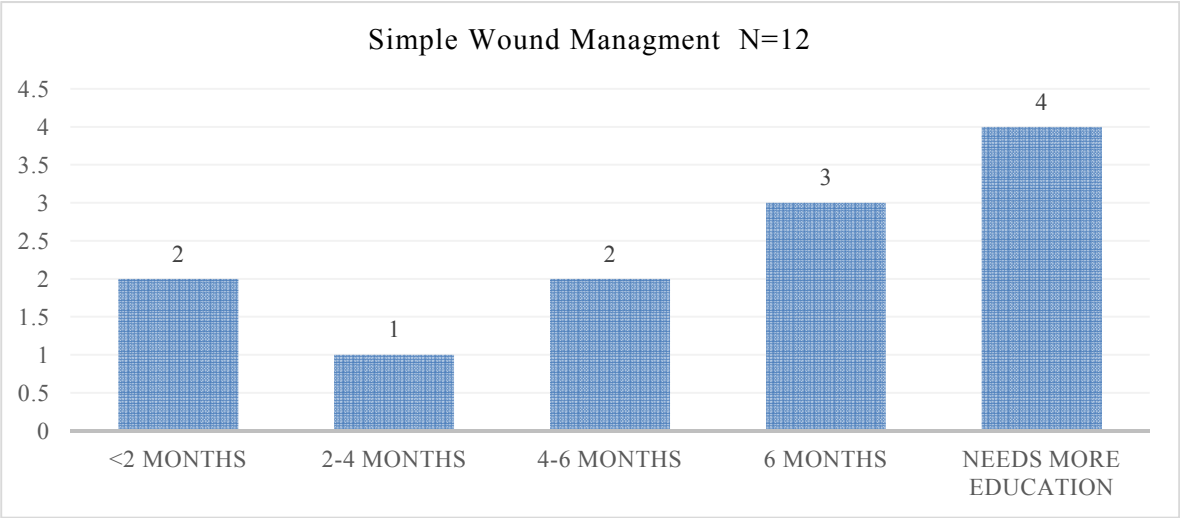

Figure 8. ED APRNs' training time for proficiency with simple wound management.

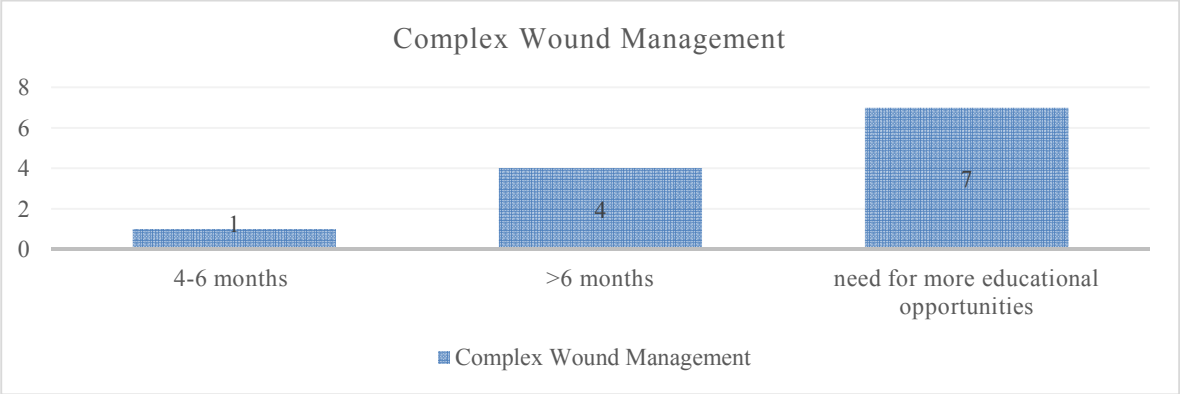

Figure 9. ED APRNs' training time for proficiency with complex wound management.

Efficiency and Time Management

Competent and effective APRNs display efficient time management, utilize concise documentation, and have an ability to clinically manage multiple patients at the same time. Developing ED APRN skills takes time and repeated clinical exposure. Experienced APRNs can

perform complex clinical skills with greater competence. The length of time that it took an ED APRN to become comfortable with the ED-specific clinical tasks is summarized in Table 8.

Table 8

Clinical Tasks Competence

Clinical tasks	Length of time to proficiency					Looking for more education
	<2 months	2-4 months	4-6 months	>6 months	>year months	
Timely documentation	5	1	0	4	1	1
Performing a complete ROS	4	4	2	0	1	1
management						
straightforward patients	4	5	0	1	1	1
complex patients	0	2	1	5	3	2
> 4 complex patients	0	3	2	2	2	3
Distinguish OM accurately	3	3	1	1	2	3
Microbiology coverage	1	3	2	2	1	4
Lab-value interpretation	1	2	3	1	0	7
X-ray interpretation	0	0	0	3	2	9
Total Number of Skills	18	23	11	19	13	31

Notes. Review of Systems (ROS); Otitis Media (OM)

ED APRNs became comfortable with most of the ED-specific clinical skills after about 6 months of practice. The average Children's Emergency Department orientation for APRNs is about 3 months. In several areas, including x-ray and lab-value interpretation, a majority of the ED APRNs wanted additional educational opportunities. The results are summarized in the Scatter (xy) Plot presented in Figure 10. APRNs became proficient with most of the skills after

about 6 months of practice. However, many APRNs felt that education was needed for several key skills.

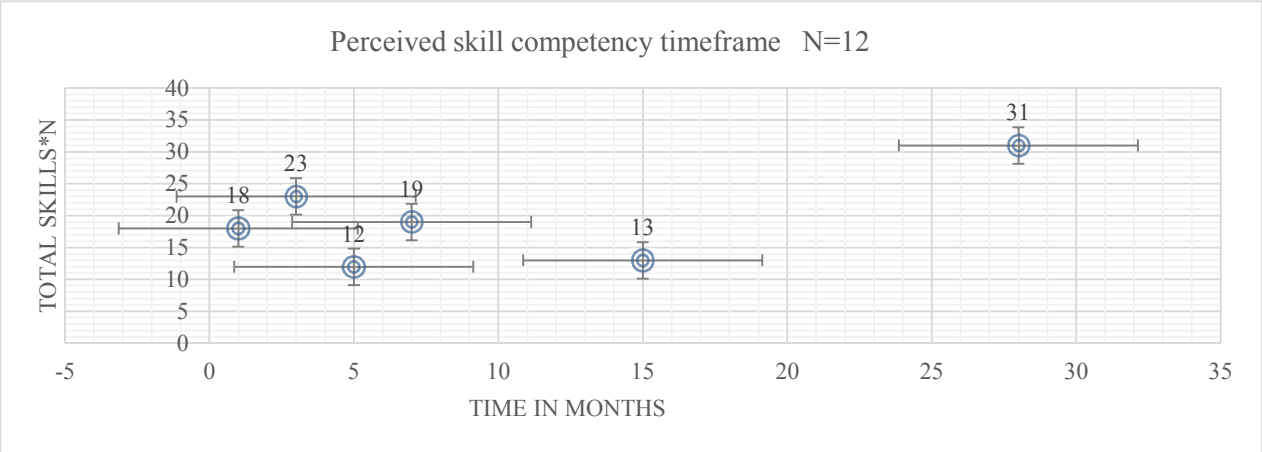

Figure 10. Perceived skill-competency timeframe for the ED APRNs

Educational Curriculum

Data exploring the APRNs opinions regarding the educational curriculum for ED APRN training were gathered in an open-ended format. Participants were asked what should be included with the training for a newly graduated APRN who is starting in the ED. The APRNs made the following recommendations:

1. Clinical education and management of children with orthopedic illness.
2. X-ray interpretation.
3. Procedure mentorship, including splinting and suturing skills.
4. Differences for the practice scope between primary care APRNs and acute care APRNs.
5. Critical-thinking skills and exercises on differential diagnoses.
6. Education about how to assess and to treat well children.
7. Common antibiotic coverage for bacterial infections.
8. Education about lab-value interpretation.
9. Education about where to find effective resources.

Next, the ED APRNs were asked a hypothetical question: "If an EM fellowship was available when they graduated, would they have considered applying for it?" Eleven APRNs (91.6%) answered affirmatively, and one APRN stated, "Not at that time, but later I would have." No one gave a negative response.

There was unanimous agreement (n=12 or 100%) that an EM fellowship for APRNs would be a valuable training option for new graduates. In the comment section, the APRNs elaborated that a fellowship would be beneficial to a new ED APRN, who is not a new graduate, but is pursuing a different practice setting. Unanimously, the APRNs agreed that they would prefer spending part of their ED training directly with their physician colleagues in addition to the APRNs. The APRNs raised questions about the fellowship's design and concerns that the fellowship may create a strain on the current ED APRNs. Additionally, differences between the ED APRN fellowship and the ED APRN orientation needed clarification.

Eight (67%) of the ED APRNs, felt that Advanced Trauma Life Support (ATLS) training was beneficial to their practice. Now, only the Pediatric Advanced Life Support (PALS) training is mandatory for ED APRNS. Nearly all of the APRNs (n=11) part of their ED training with other disciplines and specialties. The ED APRNs' recommendations about the specialty types that should be included with the APRN fellowship are summarized in Table 9.

Table 9

Specialty Training Recommendations

Specialty Training	n	%
Radiology and x-ray management	12	100%
Orthopedics	10	83 %
Infectious disease	10	83%
Trauma	9	75%
Dermatology	9	75%
Pediatric surgery	7	58%
Pulmonology	6	50%
OB/GYN	6	50%
GI	5	42%
General pediatrics	4	33%
Endocrinology	3	25%
Cardiology	3	25%
Anesthesia and pain management	3	25%

Notes. N=12; Obstetrics and Gynecology (OB/GYN); Gastroenterology (GI)

Discussion

Innovative healthcare delivery options are needed due to changing patient demographics, higher patient volumes, and increased acuity levels in emergency departments. Specialty centers, emergency departments, and healthcare organizations hire APRNs with increasing frequency. Thorough and focused specialty training for pediatric nurse practitioners makes great asset to any pediatric-specialty setting. This study revealed that the ED APRNs' educational experiences, acute care clinical exposures, and clinical specialty experiences vary.

Almost half of the core APRNs had more than 5 years of pediatric emergency-room experience. The remainder had 3-5 years of experience. Some ED APRNs were new graduates, and some had recently switched from other specialty areas. A significant percentage of the ED APRNs were newly graduated practitioners, with less than one year of training (25%) or less than one year of overall ED experience (33%).

During their training, some of the ED APRNs did not have specialty experience. For example, only 50% of APRNs had a dedicated orthopedic rotation while training. Many pediatric ED visits are orthopedic in nature. Orthopedic education was a highly requested educational opportunity for the proposed fellowship. In addition, only a third of the APRNs gained experience with general surgery during their training.

The average time for proficiency with the procedures that are commonly performed in an emergency department varied among the APRNs. However, most APRNs became comfortable with a majority of the skills within 6 months of practice, which is 3 months longer than the average orientation process that is currently utilized by Children's ED.

Effective time management and the ability to manage several complex patients at the same time are important skills for APRNs in a busy emergency department. Six of the APRNs (50%) reported being comfortable with time-management skills by the sixth month of practice, and six needed more than 6 months to be comfortable. In addition, the APRNs reported a need for additional training in many areas of practice. More instruction to interpret lab values and x-rays was reported as a need by more than 80% of the APRNs.

Curriculum development is an important part of a fellowship's design. The APRNs reported several key topics that need to be covered during the fellowship. The top four choices were radiology, orthopedics, infectious diseases, and trauma. Those topics should be specialty rotations for the ED APRN fellowship. The APRNs unanimously agreed that the fellowship is a worthwhile pursuit, and most would have considered applying for the fellowship if it had been available when they graduated.

Survey Limitations

The survey was not designed to address all the logistical and tactical dilemmas that arise when creating a fellowship. A cost analysis of the fellowship was not included in the assessment. The survey did not address the staff stress and burnout associated with preceptorship, the education modules' curriculum, the quality of the education's delivery methods, or the program development. The specialists' opinions were not addressed or assessed. Organizational feasibility and resource management were not evaluated.

The survey was developed by this writer, who was also designing the fellowship. Bias could be present in survey wording. In addition, bias could not be excluded due to the survey's qualitative nature and the open-ended questions' design. Bias could also be present because of the limited distribution of the census to one group of APRNs at one institution.

Implementation

The fellowship program was presented to Children's' leadership and was approved in April of 2015. However, an APRN fellow was not officially hired. After the initial assessment and planning were completed by the writer, the program changed leadership. The fellowship director's position was posted internally and filled by an ED APRN. All the fellowship's components, including the curriculum planning and evaluation tools, were transferred to the new fellowship director. While the intended tools for this fellowship evaluation exist, they were not used for the fellowship's evaluation. Some program components, including the fellowship's didactic education modules, were used for the ED APRN orientation. Due to a leadership change, the program's evaluation results, curriculum, 360-degree evaluation, and outcomes were not available.

CHAPTER SIX. DISCUSSION AND RECOMMENDATIONS

The fellowship project planning and implementation were met with several challenges. First, there were no comparable fellowships for APRNs in pediatric EM when this project was started. Second, existing fellowship programs for APRNs in adult EM did not share their fellowship financial structure. The lack of funding information was the greatest obstacle for creating this program. Third, there was a lack of national guidelines for APRN EM fellowships. Finally, unexpected ED APRN turnover drained the fellowship preceptor pool. This chapter reviews how the fellowship took shape, illuminates the problems that occurred during the fellowship's planning and implementation phases, describes how creating similar fellowships may affect other institutions, and provides some recommendations for the APRN graduates' future needs.

National Trends

Provider Turnover

The landscape of modern healthcare continues to change, and the number of APRNs in the acute-care setting continues to grow. Other healthcare organizations state that APRNs cause positive influence and healthy financial growth of their health institutions (Flores, Culhane, & Munkner, 2015). Healthcare delivery is shifting to enhance the advanced care providers' autonomy (Scholtz, King, & Kolb, 2014). At the same time, the APRNs are fundamentally more mobile than their physician colleagues. Flores et al., (2015) projects an average turnover rate for APRNs to be 12.6%. The APRN turnover rate is higher than the projected physicians' turnover rate. Physicians leave their specialty at an average of about 9% (Meurer et al., 2013). For Children's ED, the APRN turnover reached 35% in 2016. This high rate may influence clinical excellence, affect patient satisfaction, and increase the organization's overall expenses. The

provider-turnover cost can reach 3-6% of the total operating budget (Waldman, Kelly, Arora, & Smith, 2004). Institution-based, postgraduate education programs and APRN fellowships were cited as beneficial for organizations that were struggling to recruit and retain talent (Flores et al., 2015).

Faraz (2017) described the variables, including role ambiguity, professional role autonomy, and quality interpersonal relationships, which correlate with the turnover and retention rates for new APRNs. This institution-based fellowship program was designed to limit these variables by improving role transition, providing clinical experience to create autonomy, and organizing collaborative relationships with clinical mentors. Fellowships are designed to improve graduates' satisfaction with their new role as advanced care providers, to increase retention, to improve confidence, and to decrease the overall organizational cost.

Organizations that provide professional autonomy and explore options for mentorship improve employees' job satisfaction and, subsequently, affect the new APRNs' turnover and retention rates (Faraz, 2017). In places where there are few APRNs, mentorship may not be provided by advanced care providers instead, medical staff or residents may give the guidance. Children's has a unique advanced care provider structure, where APRNs could provide clinical education for the incoming APRN fellow in almost every pediatric specialty. Therefore, Children's is positioned advantageously as a site for the APRN fellowship training. Modeling is an important step in a new healthcare provider's holistic development, and new graduates have a need to see behavior that is modeled by experienced APRNs. Modeling can be achieved with integrated institution-based fellowship programs.

Transition to Practice

The Institute of Medicine's *The Future of Nursing* report recommended that APRNs practice to the full extent of their training and be recognized as an essential component of the new healthcare model (Institute of Medicine, 2011). As APRN numbers at healthcare organizations continue to grow, innovative methods of education are being considered. Due to the dramatic differences with the skill and knowledge levels required for each clinical specialty, the general clinic hours obtained during an APRN program are often not sufficient to fully familiarize a new graduate with the specialty clinic's needs post-graduation. As healthcare organizations search for qualified APRN candidates, hospital-based fellowship programs will become more common.

The 2011 Institute of Medicine report titled *The Future of Nursing* also recommended residency programs for nurses in the three following areas: after completing the three educational paths that lead to registration eligibility, following the completion of an advanced practice degree, or with a change of practice area (Institute of Medicine, 2011). The report provided recommendations for funding options and called for the state boards to support residency development and completion. Because post-graduation ARPN fellowships are becoming common, more organizations are turning to extended orientation programs, mini-fellowships, and transition programs for new graduates.

Financial Recommendations

After considering the salary cost for the fellowship director and the APRN fellow and estimating the potential proceeds that the APRN fellow would bring as revenue, the fellowship's total cost to the organization was estimated to be $130,000 per year. Other fellowships for advanced care providers that had a similar educational structure, including the EM fellowship in

Roanoke Virginia, reported a financially favorable outlook for the fellowship's financial structure (Carilion Health Care System, 2014). The key to the fellowship's financial success lies in the APRN's ability to bill for services during the fellowship training. By contrast, physician residents are not able to bill and must be overseen by their supervising physician. This ability to practice independently allows the ED department to adjust staffing needs in order to favor the best patient, clinical, and financial outcomes.

The proposed financial shortfall of $130,000 per year was difficult to reconcile with the organization's leadership. In the initial stages of change, national trends towards postgraduate fellowship are not widespread, and organizations may be cautious implementing fellowship programs. Despite unambiguous evidence of the overall financial benefit of postgraduate fellowship programs, the fellowship proposals need to show immediate cost effectiveness to the hospital leadership before their enactment. The EM APRN fellowship provided many long-term, cost-saving benefits, including decreased overall costs to recruit new staff, decreased orientation costs, and improved clinical outcomes. Due to the writer's lack of direct financial-planning experience, the potential cost savings were presented in a general budget description, creating a less appealing picture for the financially cognizant hospital leadership. The writer attempted to enlist the help of the Human Relations (HR) department to decipher and to describe the complicated costs of recruiting and reimbursing new personnel. Many of the actual costs were not disclosed by the HR department, making the budget planning more difficult. Future planning must include dedicated staff members who are experienced with HR budgets. Trained staff can provide the fellowship director and fellowship planning committee with much-needed advice about overall cost savings. The success of future fellowship planning depends on a sound budget proposal.

The discrepancy with national guidelines for reimbursing physician fellowships and advanced care provider fellowships creates further confusion for hospital leadership. Medical fellowships are reimbursed through a national reimbursement structure that is often funded by Medicaid dollars. Healthcare organizations consider medical fellowships lucrative because physician fellows can provide medical expertise while their employment has a low cost for the institution. Despite the American Nurse Credentialing Center's (ANCC) national call for APRN fellowship programs, to date, there is no federal reimbursement structure for APRN fellowships (American Nurse Credentialing Center, 2016). Because of this discrepancy, the APRN fellowship reimbursement can erroneously be looked at as costly instead of cost effective.

Because APRN fellows can bill independently for their services while physician residents bill under the attending physician, APRN fellowships potentially have more cost-saving capacity than physician fellowships. For the organizations to consider APRN fellowships as a cost-saving option, robust financial reporting and planning should be presented to the hospital leadership.

Staff retention, turnover, and new talent training are the costliest burdens for any clinical department. When the original program was proposed at Children's in 2014, there were 13 APRNs practicing in the Emergency Department. Due to staff turnover in the past three years, six APRNs completed new-staff orientation. The Emergency Department's orientation lasts at least 3 months. Therefore, 1.5 full-time equivalents (FTEs) were used for orientation in the past 3 years. As a result, the financial considerations associated with staff turnover must be studied during the fellowship's budget planning.

Educational Considerations

Acute care clinical experience, primary care clinical experience, and ED procedural experience are valuable skills of ED APRNs. Results of the needs assessment survey revealed

that most ED APRNs at Children's (n=10) had acute care experience during their training. However, some APRNs requested to care for healthy children as part of the fellowship curriculum. This result could be explained by a potential education gap for APRNs who hold an acute care degree. Many skills acquired in acute care postgraduate programs may not apply to the emergency department. Acute care skills may include ventilator support, central-line access, and intravenous drip medications that are not commonly used in emergency medicine. Acute care pediatric programs may lack primary care training while primary care programs may lack acute care clinical hours. In an emergency department, patient populations are very diverse, with ear infections and rashes seen with similar frequency as acute surgical abdomen and trauma. Diversity of pediatric patients in the ED dictates a need for a provider who is comfortable with both acute and primary care pediatric diagnoses.

ED procedural competency is another important skill set for ED APRNs. Needs assessment survey results shown that most APRNs became comfortable with a majority of the ED procedural skills within 6 months of practice, which is 3 months longer than the average orientation process that is currently utilized by Children's. Being competent with ED procedures decreases the length of a patient's stay in the ED and improves patient outcomes. Incorporating procedural training into the fellowship model can be beneficial for the overall ED patient flow and the quality of care.

Preceptors

Experienced preceptors stand at the center of any successful fellowship program. The Carilion Clinic's EM fellowship program directors cited the importance of experienced, willing, and engaged preceptors for their institution's fellowship (Carilion Health System, 2014). The

ED APRN fellowship at Children's was designed with ED APRNs preceptors, specialty clinic APRN preceptors, ED physicians, and specialty clinic physicians.

Specialty-clinic preceptors were recruited through personal conversations with clinic management and by directly recruiting APRNs for the desired specialty areas. Despite the voluntary nature of the preceptorship, this program received tremendous support, and there was an ongoing interest with precepting for most specialty clinics. From orthopedic APRNs to certified registered nurse anesthetists (CRNAs) who are staffing the pain and palliative-care department, advanced care providers were willing and excited to be part of the EM fellowship training.

There were many reasons for preceptor interest. First, many specialty APRNs were excellent clinicians and engaged teachers who wanted to share expertise with the incoming fellows. Second, the specialty-clinic experience was of short duration. The minor commitment was less likely to cause fatigue. Preceptors needed to commit an average of 2 weeks for hands-on training per student every year. The short commitment prevented preceptor burnout while providing the fellow with a well-rounded training experience. Finally, many APRNs felt that training the incoming fellow was beneficial for the specialty clinics. After the fellowship, an APRN had a good chance of being hired by the ED. As a result, an APRN who received specialty-clinic training was more familiar with medical recommendations, treatment guidelines, and specialty management. An APRN who was more familiar with specialty recommendations would manage ED patients with greater independence. For example, a fellow who had specialty orthopedic training could manage simple injuries and splinting in the ED without involving an orthopedic specialist. Overall, the preceptors' willingness and enthusiasm for the fellowship's development were overwhelmingly positive.

Preceptorship in the ED was also carefully considered. The bulk of the APRN fellow training would occur in the ED. Therefore, involving the ED APRNs would make the fellowship successful. Two problems, which affect the preceptorship's quality originated in the ED: preceptor burnout and an unprecedented turnover rate for experienced APRNs. APRNs with more than five years of EM experience would be more suitable for a preceptor role than recent graduates. With more than a 35% turnover rate for ED APRNs between 2014 and 2016, the fellowship program could not recruit enough experienced APRNs.

This project was designed to ease the stress and burnout that experienced APRN staff endured when orienting new hires to the ED. In theory, an APRN fellow would already have the bulk of his/her specialty training completed, would have clinical experience, and would be more independent when starting his/her ED rotation. The APRN fellow, in theory, should ease the orientation fatigue for the experienced ED staff.

However, the APRN leadership did not fully agree that the fellowship would ease the orientation-fatigue burden. The ED APRN leadership expressed serious doubts about the availability and willingness of seasoned ED staff to provide orientation for the APRN fellow. An unprecedented ED staff-turnover rate heightened leadership concern about the willingness and availability of staff to orient the APRN fellow. From 2014-2016 staff and new hires were mostly new graduates themselves and were unable to perform the duties of experienced ED preceptors. In May of 2016, five of the ED APRN positions remained unfilled. The APRN turnover rate resulted in unfilled shifts and, eventually, caused this project to be placed on hold by the ED APRN leadership.

This unfortunate scenario was unpredictable. Other institutions with fewer ED APRN positions have appointed one or two seasoned preceptors to educate incoming fellows. By

having designated preceptors, the APRN fellow is afforded consistent, quality educational opportunities. In addition, the value of an experienced preceptor cannot be underemphasized. In a department where turnover is high, experienced APRNs who perform the duties of a preceptor must be recognized for their time and experience. Unfortunately, fellowship preceptors were not available, and no fellow was accepted in 2015 or 2016.

Blegen et al. (2015) described the need for organizational support of the nursing preceptors. Organizational support includes decreasing the size of the preceptor's assignments, scheduling the preceptor and the student on the same shifts, and providing integrated educational support. This assistance may include developing didactic modules, selecting evidence-based literature, and having dedicated office and clinical time.

The ED physicians' collaboration, willingness, and support for this project were inordinate. Building on already-existing EM fellowship, the APRN fellow would spend several weeks in a high-acuity section of the ED; the fellow would manage complicated pediatric patients under the clinical guidance of a supervising EM physician. The supervising physician would free the APRN preceptor for other projects while providing valuable interdisciplinary and acute-care clinical experience for the APRN fellow.

Didactic Modules

Developing the didactic modules was a vital component of this project. There were no national guidelines for the ED APRN fellowship when the project began. Therefore, the specialty-module development was left to the specialty preceptors and to the fellowship director. Information obtained from the needs assessment at the start of this project was useful when developing the specialty modules. One large center study assessed the effectiveness of a comprehensive, competency-based orientation process (Sholtz, King, & Kolb, 2014). More than

a quarter of the newly hired APRNs expressed the need for more support during their transition and called for standardization education methods to be developed for the orientation process (Sholtz, King, & Kolb, 2014). Because creating the comprehensive and evidence-based, didactic-education portion of the fellowship takes time, dedicated fellowship-director hours are essential.

The non-clinical time required to develop didactic clinical modules needs to be addressed at the beginning of the fellowship planning. Ideally, the education modules should include both didactic and clinical materials. Time to research the pertinent clinical material, to develop the learning materials, and to create delivery methods for the material should be protected by the fellowship director and the preceptors' non-clinical hours. For example, developing the radiology module took a year to complete. Radiographic images from multiple patient clinical sites were gathered, processed, and edited in a PowerPoint format. In the end, a robust education module that covered common diagnoses and x-ray-interpretation techniques was presented for education.

In addition, the content of each EM didactic module needs to be pertinent, current, and evidence based. Reviewing the treatment guidelines is recommended on a yearly basis. Therefore, the modules should be reviewed at the beginning of each year's fellowship rotation.

Organizational Readiness and Culture Change

The change theory describes how organizations pass through predetermined stages when change is implemented (Health Behavior and Health Education, 2015). Both Lewin's 1951 change model and Rogers diffusion of innovation theory (2003) suggests that gaining awareness about the problem and workable solutions is the first step when experiencing organizational change (Mitchel, 2013). Organizations begin to appreciate that a solution for the shortage of

experienced advanced care providers can be found not only from the external recruitment, but also from the internal development of robust education programs. Organizations must continue to modify their organizational structure to accommodate innovations. Changing the status quo might be the most difficult step when implementing an innovation and change agents should be supported with that endeavor.

The organization's willingness to accept and support a project of this magnitude cannot be overemphasized. Initial assessment of the organization's readiness for the ED APRN fellowship was encouraging. In 2014, Children's created a new position for a hospital fellowship administrator who oversaw multiple medical fellowships at the institution. Dr. Sidman, an experienced physician who created a nationally recognized fellowship in otolaryngology (ENT) and craniofacial plastic surgery at Children's, accepted the position. When this project was presented to the fellowship office and to the fellowship administrator at Children's, it received great support. An initial budget and office staff were allocated for the program's development. When this project was presented to the hospital leadership in 2014, it also received approval. Due to an illness, Dr. Sidman had to leave his post as the hospital's fellowship administrator in 2015. His position continues to be unfilled, leaving the ED APRN fellowship without a clear organizational support structure.

Moreover, the ED leadership expressed concern that the future director for the ED APRN fellowship was sharing clinical time between the ED and trauma departments. The writer had 12 years of direct ED experience at Children's but transferred to the inpatient surgical trauma service in 2014. Despite the writer's close involvement with the program, the fellowship-director position was posted internally and filled by the ED APRN. Due to APRN turnover and a lack of experienced preceptors, no new EM APRN fellow positions have been posted since 2016.

The project's future is unclear. Those unfortunate, internal circumstances affected the overall acceptance and organizational readiness for this program's implementation.

Implications and Outcomes

Postgraduate fellowship program for APRNs streamline and enrich the orientation process, ease the transition to practice, facilitate the training for newly graduated APRNs, and complement additional clinic education when the APRNs change practice specialties. Established APRN fellowship programs cite overwhelming support and positive feedback from their graduates about the ease of the role transition after fellowship training (Varghese, Silvestri, & Lopez, 2012). The complexity of the acute-care, emergency medicine setting requires advanced skills from the new graduates. Often, new graduates have not developed those skills (Dillon et al., 2016). The lack of exposure to the clinical skills that are necessary for the transition is especially evident in an EM practice. Exposure to EM skills may not be possible during the university education, and a fellowship program can provide a cohesive bridge for this lack of clinical experience. In addition, the role integration and personal growth required for entry into the provider role are best met with the staff modeling that can be achieved in the fellowship setting. The writer predicts that, with the changing, modern healthcare model, new graduates will favor the fellowship approach for transitioning to practice.

Implications for Health Organizations

The increased need for qualified and experienced APRNs in acute care settings, modern healthcare organizations are struggling to recruit and to retain skilled talent. This issue is evident at Children's, where the turnover rate for pediatric APRNs was high in the past 4 years. Currently, there are several unfilled ED APRN positions. APRNs are not restricted to one clinical specialty and could be more apt to switch departments than their physician colleagues. It

is this writer's experience that staffing changes and turnover in the emergency departments cause decreased quality of care and increased employment cost for the department. Postgraduate APRN fellowships decrease turnover by promoting competence, creating a sense of belonging to a medical community, and increasing the clinical skills for newly graduated APRNs (Sorce, Simone, & Madden, 2010).

Many states already adopted legislation that requires ARPNs to have national certification in the area that most closely resembles the practice area (Sorce et al., 2010). Children's prefers acute care certified pediatric APRNs staffing its ED. Many registered nurses do not have access to pediatric acute-care NP programs due to geographic limitations. In addition, APRNs who are acute-care prepared may not have experience with the common non-urgent complaints that many pediatric patients present at the ED. ED APRNs must have clinical knowledge about the signs and symptoms of common childhood illnesses, acute care complaints, as well as childhood trauma and ED procedures. Therefore, bridging knowledge gaps with postgraduate training is an appropriate solution for both acute care and primary care prepared APRNs in the ED setting.

Implications for Legislative Change

Current federal guidelines, which affect the reimbursement of postgraduate education unfairly, favor medical fellowship programs over the APRN fellowships. Healthcare organizations are familiar with national reimbursement guidelines for medical fellowships. The lack of federal funding for the APRN fellowships creates confusion and general resistance from hospital administration when program planning and implementation have a negative effect the hospital's overall budget.

Current legislative language that favors reimbursement for medical fellowships over the APRN fellowships needs to change (Flinter, 2005). If Medicaid funds dedicated to medical fellowships are available for the APRN fellowships, healthcare organizations will have more financial freedom to implement hospital-based, postgraduate education programs. Improved funding will translate to an increased number of postgraduate programs, allowing a larger number of APRN graduates to take advantage of the postgraduate fellowships. When more APRN fellowships are available, standardization of the fellowship curriculum will create improved care and educational outcomes.

National Education Standards

To date, there are no guidelines or educational requirements for APRN fellowship programs. The Institute of Medicine's (2011) *The Future of Nursing* report recommended postgraduate training programs for newly graduated APRNs; however, very few ED APRN fellowships are currently available. National credentialing organizations, including the Pediatric Nurse Certification Board (PNCB), the American Nurse Credentialing Center (ANCC), and the American Academy of Emergency Nurse Practitioners (AAENP), could form a coalition to develop national guidelines for EM APRN fellowships. Currently, the AAENP offers a national certification for ED APRNs, and a postgraduate fellowship could be an optional step for this certification requirement. Overall, standardizing EM APRN fellowships can create a more robust and cohesive postgraduate program that benefits both the healthcare organization and the newly graduated APRN.

Personal Reflection

Planning and implementing this large hospital-based project created multiple opportunities for personal and professional growth for the writer. First, the needs-assessment,

and project-planning stages called for the application of several new skills. A project of this magnitude required the conceptualization of new measuring tools and the application of data processing. Second, the project planning required survey development, data collection, and data synthesis. The results were presented to the hospital administration, a step that required cohesive presentation and excellent speaking skills. Finally, the project complexity and time commitment along with multiple, unforeseen setbacks during the project's implementation, required the writer have significant endurance skills. Keeping the project alive, promoting the project's overall benefit and keeping the project's final goal in mind were necessary for the project's success. Overall, gaining leadership skills was the most beneficial aspect for the smooth continuation of this project.

The project's size and complexity cannot be understated. In a project of this size and complexity, supplementary staff and additional time need to be allocated for successful completion. A team with a project director, office personnel, education personnel, and more importantly, vested financial advisers, was needed to present a more comprehensive plan to the hospital administration. Without the backing of a sound financial plan, as well as dedicated time for planning and education, a similar project would not be successful.

While this project encountered significant setbacks, the lack of an APRN fellow who completed the fellowship does not indicate that this project is a failure. Several beneficial outcomes resulted from this project. Because of this project, the Children's APRN group and the Children's leadership have been revisiting the current educational guidelines, credentialing, and onboarding processes for both APRNs and APRN students. Trauma and surgical services are creating a new APRN-student orientation process that implements many of the ED APRN fellowship concepts. Children's inpatient APRN group is partnering with the Children's

medical-fellowship group to streamline the hospital's postgraduate education. Several modules that were created for the APRN fellow's didactic education will be used to educate APRN students and new staff. Finally, a new professional education committee was created for the hospital. The committee reports to Professional Education Services (PES) and provides oversight for the education at Children's. These changes will benefit new graduate employees at Children's, provide oversight for postgraduate education, and promote excellence in clinical practice.

REFERENCES

Accreditation Review Commission on Education of the physician Assistants. (2014). *Accredited Clinical Postgraduate PA Programs*. Retrieved from http://appap.org/

Alliance of Academic Internal Medicine (2016). *Residency evaluation tools.* Retrieved from http://www.im.org/p/cm/ld/fid=701

Alexandrov, A., Brethour, M., Swatzell, V., Reiner, D., Handler, D., & Yang, J. (2009). Postgraduate fellowship education and training for nurses: The NET SMART experience. *Critical Care Nursing Clinics of North America*, *21*, 435-449.

American Academy of Emergency Nurse Practitioners. (2016). *Fellowship programs*. Retrieved from http://aaenp-natl.org/content.php?page=Fellowship_Programs

American Board of Physician Specialties. (2016). *Emergency medicine eligibility*. Retrieved from http://www.abpsus.org/emergency-medicine-eligibility

American Nurse Credentialing Center. (2016). *Practice Transition Accreditation Program.* Retrieved from http://nursecredentialing.org/PTAP-AccreditationManual

American Nurse Credentialing Center. (2014). *Emergency nurse practitioner ENP-BC*. Retrieved from http://www.nursecredentialing.org/EmergencyNP

Blegen, M., Spector, N., Ulrich, B., Lynn, M., Barnsteiner, J., & Silvestre, J. (2015). Preceptor support in hospital transition to practice programs. *The Journal of Nursing Administration*, *45*(12), 642-649.

Bush, C. (2014). Postgraduate nurse practitioner training. *Journal of Nursing Administration*, *44*, 625-627.

Carilion Clinic Department of Emergency Medicine. (2011). Advanced practice fellowship program for physician assistants and nurse practitioners [Business plan].

Carilion Health Care System. (2014). *Training nurse practitioners and physician assistants in Carilion Clinic in Virginia.* Retrieved from http://www.carilionclinic.org/education/virginia-medical-fellowships

Carolina Health Care System. (2016). *Advance practice fellowships*. Retrieved from http://www.carolinashealthcare.org/center-for-advanced-practice-fellowship

Center for Teaching and Learning. (2016). *Community of inquiry* [Figure]. Retrieved from http://www.apus.edu/ctl/faculty/community-of-inquiry/

Children's Hospitals and Clinics of Minnesota. (2013, December). *Affective Action Equal Employment Opportunity Policy #1021.00* [Policy]. Minneapolis, MN.

Children's Hospitals and Clinics of Minnesota. (2014). *Mission statement*. Retrieved from www.childrensmn.org/about-us#sthash.nZckg0qV.dpuf

Corbridge, S. J., Tiffen, J., Carlucci, M., & Zar, F. A. (2013). Implementation of an interprofessional educational model. *Nurse Education*, *38*(6), 261-264. doi:10.1097/01.NNE.0000435271.40151.23

Danielson, C., & Rushton, H. G. (2011). Non-physician provider fellowship training: Meeting patient's needs in a time of physician shortages. *Journal of Urology*, *185*(3), 771-773. doi:10.1016/j.juro.2010.11.024

Dickerson, C., Green, T., & Blass, E. (2014). Workforce development and effective evaluation of projects. *British Journal of Nursing*, *23*(12), 685-690. doi:10.12968/bjon.2014.23.12.685

Dillon, D., Dolansky, M., Casey, K., & Kelly, C. (2016). Factors related to successful transition to practice for acute care nurse practitioners. *American Association of Critical-Care Nurses Advanced Critical Care*, *27*(2), 173-182.

Faraz, A. (2017). Novice nurse practitioner workforce transition and turnover intention in primary care. *Journal of American Association of Nurse Practitioners*, *29*, 26-34.

Flinter, M. (2005). Residency programs for primary care nurse practitioners in federally qualified health centers: A service perspective. *The Online Journal of Issues in Nursing*, *10*(3), 6. Retrieved from http://www.nursingworld.org/

Flinter, M. (2011). From new nurse practitioner to primary care provider: Bridging the transition through FQHC-based residency training. *The Online Journal of Issues in Nursing*, *17*(1), 6.

Flores, C., Culhane, D., & Munkner, J. (2015, August). An employee driven approach to improving clinical retention [Editorial]. *California Emergency Physicians America*. Retrieved from http://www.cepamerica.com/news-resources/perspectives-on-the-acute care-continuum/

Glassdoor. (October 19, 2016). *Medical Fellow Salaries.* Retrieved from-https://www.glassdoor.com/Salaries/medical-fellow-salary-SRCH_KO0,14.htm

Graduate Nursing Education. (2014). *Partial list of NP residency and fellowship programs*. Retrieved from http://www.graduatenursingedu.org/nurse-practitioner-residency-programs/

Health Behavior & Health Education. (2015). *Stage theory of organizational change*. Retrieved from http://www.med.upenn.edu/hbhe4/part4-ch15-stage-theory-of-organizational-change.shtml?1 2015

Institute of Medicine. (2011). *The future of nursing: Leading change, advancing health*. Washington, DC: The National Academies Press.

Joffe, M., Pastores, M., Maerz, L., Mathur, P., & Lisco, J. (2014). Utilization and impact on fellowship training of non-physician advanced practice providers in intensive care units of academic medical centers: A survey of critical care program directors. *Journal of Critical Care*, *29*(1), 112-115. doi: 10.1016/j.jcrc.2013.10.00

John Hopkins Medicine. (2014). *Nurse practitioner fellowship program*. Retrieved from http://www.hopkinsmedicine.org/som/gme/fellows/programs.htm

Kelly, R., & Mathews, M. (2001). The transition to first position as nurse practitioner. *Journal of Nursing Education*, *40*(4), 156-162.

Mayo School of Health Sciences. (2013). *Nurse practitioner and physician assistant critical care fellowship*. Retrieved from http://www.mayo.edu/mshs/careers/nurse-practitioner/nurse-practitioner-or-physician-assistant-critical-care-fellowship-minnesota

McGraw-Hill Medical. (2014). *Access Emergency Medicine.* Retrieved form http://accessemergencymedicine.mhmedical.com

Mencio, G., Swiontkowski, M. (2014). *Green's Skeletal Trauma in Children*. Philadelphia, PA: Saunders.

Meurer, W., Sozener, C., Xu, Z., Frederiksen, S., Kade, A., Olgren, M., Vieder, S., Kalbfleish, J., & Scott, P. (2013). The impact of emergency physician turnover on planning for prospective clinical trials. *Western Journal of Emergency Medicine, 14*(1), 16-22.

Mitchel, G. (2013). Selecting the best theory to implement planned change. *Nursing Management*, *20*(1), 32-37.

Neumann, T. (1997). Establishing philanthropic funds for advanced practice scholarships. *Recruitment Retention & Restructuring Report*, *10*(3), 1-4.

Nicely, W., & Fairman, J. (2015). Postgraduate nurse practitioner residency programs: Supporting transition to practice. *Academic Medicine*, *90*(6), 707-709. doi:10.1097/ACM.0000000000000567

Pediatric Nursing Certification Board. (2014). *PNCB recognized acute care PNP programs*. Retrieved from https://cert.pncb.org/exams/ac/progs

Phillips, D., Forbes, H., & Duke, M. (2013). Teaching and learning innovations for postgraduate education in nursing. *Collegian*, *20*(3), 145-151. Retrieved from http://www.nursingworld.org/

Rogers, E. (2003). *Diffusion of innovations*. New York, NY: Free Press.

Rogers, P. (2014, September). *Theory of change* (Impact evaluation 2) [Brief]. Paper presented at the United Nations Children's Fund meeting. Retrieved from http://devinfolive.info/impact_evaluation/img/downloads/Theory_of_Change_ENG.pdf

Rosenzweig, M., Giblin, J., Morse, A., Sheehy, P., Soomer, V., & Bridging the Gap Working Group. (2012). Bridging the gap: A descriptive study of knowledge and skill needed in the first year of oncology nurse practitioner practice. *Oncology Nursing Forum*, *39*(2), 195-201.

Sargent, L., & Olmedo, M. (2013). Meeting the needs of new-graduate nurse practitioners: A model to support transition. *Journal of Nursing Administration*, *43*(11), 603-610.

Schneider, S. M., Gardner, A. F., Weiss, L. D., Wood, J. P., Ybarra, M., Beck, D. M., & Jouriles, N. J. (2010). The future of emergency medicine. *Journal of Emergency Medicine*, *39*(2), 210-215. doi:10.1016/j.jemermed.2010.06.001

Sholtz, A., King, K., Kolb, S., (2014). The care model of the future: supporting APRNs through an innovative transition to practice program. *Journal of Pediatric Health Care*. *28*(3), 276-279.

Sorce, L., Simone, S., & Madden, M. (2010). Educational preparation and postgraduate training curriculum for pediatric critical care nurse practitioners. *Pediatric Critical Care Medicine*, *11*(2), 205-212. doi:10.1097/PCC.0b013e3181b80a19

University of Minnesota. (2014). Hematology/oncology fellowship program; communication, interpersonal skills, and professionalism; evaluation form-360. Retrieved from https://hub.med.umn.edu/sites/hub.med.umn.edu/files/hematology-oncology-transplant_hot_fellowship_multi-rater_form.pdf

Varghese, J., Silvestri, A., & Lopez, P. (2012). Reaching new heights: Development of the emergency department nurse practitioner fellowship program. *Pediatric Emergency Care*, *28*(1), 6-7. doi:10.1097/PEC.0b013e31823ed4d9

Waldman, D., Kelly, F., Arora, S., & Smith, H. (2004). The shocking cost of turn-over in health care. *Health Care Management Review*, *29*(1), 2-7.

Wiltse, K., & Fairman, J. (2015). Postgraduate nurse practitioner residency programs: Supporting transition to practice. *Academic Medicine*, *90*(6), 707-709.

Yeager, S. (2010). Detraumatizing nurse practitioner orientation. *Journal of Trauma Nursing*, *17*(2), 85-101.

Zapatka, A., Conelius, J., Edwards, J., Meyer, E., & Brienza, R. (2014). Pioneering a primary care adult nurse practitioner interprofessional fellowship. *The Journal of Nurse Practitioners*, *10*(6), 378-386.

APPENDIX A. LESSONS FROM CARILION

The current medical literature shows a deficiency of comprehensive, descriptive reviews for APRN fellowship programs. Moreover, the literature also lacks descriptions about the steps which are necessary to create and maintain APRN fellowship programs. Therefore, in December of 2014, this writer visited Carilion Clinic and Roanoke Memorial Hospital in Roanoke, Virginia. Carilion Clinic established an emergency-department (ED) fellowship for advanced-care providers (ACPs). The purpose of the visit was to gather information and share knowledge regarding an emergency medicine (EM) fellowship for ACPs. The Carilion Clinic fellowship was established in 2011 and was the first of its kind in the United States. This unique fellowship offers postgraduate physician assistants (PAs) and advanced-practice registered nurses (APRNs) a unique opportunity to obtain comprehensive clinical training and didactic instruction that are structured around emergency-medicine specialties.

The following information was obtained from personal interviews with the program directors and face-to-face discussions at Carilion Clinic. The interviews took place on November 19, 2014. Participants included the Fellowship Director, the Advanced Clinical Practitioners Manager, the Senior Director of the Emergency Medicine Department, and the Advanced Clinical Practitioner form the Department of Emergency Medicine.

Program Overview

The Carilion Clinic is offering post-graduate PA and APRN fellowship training in emergency medicine (EM) for nationally certified, new graduates who are seeking advanced training and experience in the EM field. This program is based upon the strength of an already established and highly successful ACP EM practice. The fellowship is a complement to an

emergency-medicine residency program which is already in place at Carilion Clinic and mirrors the EM physician's residency training.

The program speculates that the fellows who are accepted will acquire substantial skills, knowledge, and competencies that are required in the emergency-medicine field. The fellows are full-time employees of the Carilion Clinic and are eligible for full medical, dental, and disability benefits. Advanced clinical practitioners are not part of the professional staff at Carilion; therefore, the fellows do not have voting rights or privileges.

Mission and Objectives

The Carilion Clinic fellowship's mission is to educate and train highly motivated providers in the challenging and diverse knowledge base and procedural skills required for excellence in clinical practice in emergency medicine" (Carilion Clinic Department of Emergency Medicine, 2011). Additional goals include preparing the ACPs for careers in emergency medicine as competent, highly functional members of the healthcare team. The fellowship provides ACPs with further education, as well as specialized clinical and professional experience, and distinguishes them, clinically, from non-specialty ACPs. Last, the fellowship aims to support the retention of extremely focused and well-trained ACPs as future clinicians and employees at Carilion (Carilion Clinic Department of Emergency Medicine, 2011).

The fellowship program was initiated when Carilion Clinic experienced difficulty recruiting and retaining staff with relevant clinical experience. The emergency-medicine staff hoped to provide relevant clinical experience with a future goal of retaining talent. While clinic employment after the fellowship's completion is not guaranteed, Carilion Clinic instituted a fair and equal hiring process which allows fellow graduates to apply for open positions after their fellowship. The hiring process has proven to be very useful for retaining excellent providers.

Education Structure

Adaptability and flexibility for the fellowship's structure were high on the priority list for the fellowship-development team. This12-month fellowship is divided into the specialty education portions. The fellows begin their education with emergency medicine (EMS) Boot Camp. This one-month rotation includes a review of electronic medical records (EMR), an introduction to the organization's culture, the completion of certification courses including Pediatric Advanced Life Support (PALS), Advanced Trauma Life Support (ATLS), and the online didactic education. During this time, the fellow also applies for in-hospital credentialing. The boot camp is followed by several clinical rotations:

1. Radiology.
2. Cardiology.
3. Internal medicine and ICU.
4. Orthopedics.
5. Trauma surgery.
6. Anesthesia.
7. Ophthalmology.
8. Radiology.
9. Flight time with medical transport and community EMS.

Following the specialty rotations, the fellowship program culminates with an eight-month clinical rotation in emergency medicine. This fellowship-education model adapts an interprofessional approach, where the fellows are expected to learn from and collaborate with multiple members of the healthcare team. The ACP fellows spend some time working with nurses in the inpatient units, emergency-department pharmacists, or the community EMS

transport team. This innovative approach allows for broad, multidisciplinary educational experiences where fellows learn healthcare delivery methods at each point of interaction with multiple healthcare team members. Research on this type of experience is thought to promote understanding and tolerance between healthcare team members, thus improving the quality of care (Corbridge, Tiffen, Carlucci, & Zar, 2013).

Needs Assessment

There was no official needs assessment performed prior to developing the fellowship. The fellowship directors had a roundtable discussion to review the educational topics that needed to be covered during this fellowship experience. The curriculum was tailored to the hospital's clinical availability. The ACPs' educational needs may vary, depending on education and experience levels. For example, an APRN who lacks intubation experience may want to spend time with anesthesia while a PA who had procedural experience during school may need more dedicated pediatric time before completing the fellowship.

Program Evaluation

The fellowship program had multiple evaluation opportunities, including

1. ACP fellow, staff, and medical directors held monthly meeting for evaluation of the fellows' performance. During those meetings, the fellows could voice their needs and concerns regarding the program.
2. Attending physician evaluated fellow' performance. Each clinical rotation site requested that the attending physician perform a written evaluation of the fellow, commenting on performance, interpersonal skills, and clinical competences. Those evaluations were reviewed during the monthly meetings.

3. Attending physicians evaluated the fellowship's effectiveness by providing written feedback.
4. The ACP fellow provided written feedback regarding the fellowship's effectiveness.

Didactic Portion

This fellowship design included a robust didactic curriculum. Each fellow spent an average of 30% of his/her education time on didactic education and 70% of his/her time on clinical education. The didactic education included

1. Weekly journal club, run by the EM physicians and staff.
2. Weekly fellowship meetings where case studies were presented and discussed.
3. Frequent clinical simulation and lab presentations.
4. Scholarly and research practice, where each fellow completed a research proposal, a publishable case study, or a conference presentation.
5. Weekly reading and quizzes.

The case studies, reading, and quizzes were available to each fellow from the compilations of Access Emergency Medicine (2014). Access is a web-based, asynchronous learning experience which is successfully used for the didactic portions of EM-physician fellowships at many healthcare organizations. However, ACP education varies from physician education, and the Access curriculum and quizzes were modified to fit the unique needs of ACP fellows. The fellowship team created a custom reading and testing curriculum from the Access Emergency Medicine website and transferred that curriculum to the BlackBoard platform. When preparing for the clinical experience, the ACP fellows were expected to spend an average of 15 hours per week on reading and quizzes.

Certification, Accreditation, and Course Credit

Currently, APRN fellowships have no formal accreditation process while PA fellowships may apply for national accreditations. When this manuscript was written, only the University of Iowa had a PA EM fellowship with a national accreditation (Accreditation Review Commission on Education of the Physician Assistants, 2014). The fellowship directors considered national accreditation for the Carilion ACP fellowship and a collaboration with a teaching institution such as a medical school or an accredited university.

The national accreditation process was described as cumbersome, expensive, and unnecessary. National accreditation was not pursued. Collaborating with a university was difficult due to the reimbursement expense for the cost of the educational credits obtained while at the university. In addition, the leadership team valued its control over the fellowship's curriculum, clinical hours, and educational standards. The team recommended a collaborative approach to negotiate with the universities for the earned credits. Team members felt that many universities, medical schools, and PA programs will benefit from collaborating with the fellowship. The team recommended approaching local teaching institutions with a request to tailor academic credits to fit the existing fellowship model. For example, a student seeking an academic or clinical credit from a teaching institution that has contractual reciprocity with the fellowship program may obtain credit for hours spent in the fellowship. The teaching institution tailors the class description to the fellowship. The student pays tuition to the university, making this transaction financially appealing to both the teaching institution and the organization hosting the fellowship.

Financial Planning

The fellowship's financial health was important to the fellowship-development team. The fellowship continues to be self-sufficient, using no grants, donations, or hospital funds. The program is a financial success, with a net surplus averaging approximately $20,000 per year. The fellowship directors stated that "this fellowship funds itself." The key to program success lies in the direct billing. Only candidates who graduate from accredited programs and pass national board exams are eligible for the program. The candidates are credentialed by the institution and can bill for services rendered.

Fellows are reimbursed at 50% of the average new-graduate salary for the specialty area. In Virginia, an EM ACP could expect to make $105,000 per year in 2014. The fellows are offered a $52,000 yearly salary. In return, the ACP fellows receive a robust education and relevant clinical experience. No tuition is charged, and the fellows are responsible for their own room and board. The fellowship director stipulates that, upon graduation, an experienced ACP fellow will make a substantially larger salary then an average new graduate with no fellowship experience. Subsequent raises and bonuses eventually make up for the lost revenue during the first year of the fellowship. This proposed financial benefit needs to be evaluated statistically as more program graduates continue their careers.

On average, benefits, retirement, disability, and other miscellaneous human-resource (HR) expenses add up to an additional 25% the fellow's salary. An additional continual medical education (CME) fund of $5,000 is given to the fellow for graduate or miscellaneous expenses. CME may be used for the uniforms, software, hardware, and conference travel. The hospital's total cost for the fellowship is $72,000 per person. The fellows can bill and collect revenue for the patients seen in the ED, creating 8 months of revenue for the institution. Even at the lower

productivity rate, a fellow who is paid at the 50% rate and works 70% of the year creates revenue for the program.

Additional fellowship costs are shared between the salaries of the medical directors and the support staff. An average of 0.3 and 0.2 of full-time equivalents (FTEs) are shared among the medical directors. An office-support staff member adds 0.2 FTEs to the program cost. The medical directors and office-support staff work with 3 fellows per year.

Program Difficulties and Recommendations

The leadership team has disclosed some potential difficulties that arose during the fellowship's implementation and development phases. For example, assessing the individual billing revenue of the ACP fellows is not currently possible at Carilion because billing is electronically connected to the attending staff members' encounters. Billing can only be tracked to a physician, not to an ACP. In addition, the Carilion Clinic ACPs are not part of the professional staff, and they have no legal voting rights with the professional staff's by-laws.

While most of the physician staff members were highly enthusiastic about the ACP fellowship's implementation, retaining highly qualified and motivated preceptors fluctuated with each fellowship year. Some educators reported getting burned out, decreased productivity, or staffing concerns for their departments. The fellowship directors recommended having additional financial support, dedicated office time, and hospital recognition for highly motivated preceptors.

The fellowship directors noted that some ACP fellows might be disappointed with a pay cut during the fellowship. The program description has to be clear about reimbursement. The program was designed to provide beneficial education with long-term gains obtained after the fellowship's completion. Despite the low reimbursement, the Carilion Clinic experienced no

decline in applicants. For the 2014 academic year, more than 50 highly qualified applicants applied to the program, which only has 3 open spots per year. Those numbers illustrated a large regional need for this fellowship program.

Needing continual support from qualified support staff members and protected time for the fellowship director was also emphasized by the fellowship's staff. Creating the program curriculum, developing the didactic module, coordinating the site, and scheduling the preceptors required dedicated personnel and time. In addition, a highly qualified administrative assistant was paramount for the program.

Overall, Carilion Clinic has developed a comprehensive and a robust educational experience for the ACPs who want to pursue more clinical education in the specialty area of emergency medicine. The professional exchange of information during the meetings has proven to be invaluable. Very few descriptive cases about development, management, and the effectiveness of the fellowship programs are currently available in the medical literature. Lessons learned from Carilion Clinic's experiences can be utilized to develop the fellowship at Children's.

APPENDIX B. LESSONS FROM REGIONS HOSPITAL

Creating fellowships for advanced-practice registered nurses (APRNs) can be difficult due to the lack of national standards that delineate curriculum development and the lack of available literature. For nurse practitioners, there is no certifying body that regulates the APRN fellowships. While there are several emergency medicine fellowships for advanced care providers (ACPs), none of them are pediatric specific. Sharing the lessons learned from creating the existing fellowship programs may benefit individuals who embark on that journey.

In May of 2014, this writer interviewed Ann Verhoeven, PAC, MMSc. Ms. Verhoeven is a residency director for the Regions Hospital Emergency Medicine Physician Assistant (EM PA) fellowship in St. Paul, MN. This appendix summarizes the interview. While Regions' fellowship program is designed for physician assistants (PAs), the lessons learned from this program's inception are relevant to the creation of a nurse-practitioner fellowship.

Program Overview

Regions Hospital EM PA fellowship was established in 2011 as a response to an increased need for well-qualified and experienced ACPs to staff Regions' emergency department. New staffing models and national restrictions for residents' practice hours opened new staff positions that were filled by PAs. While each organization's cultural practices for hiring PAs or APRNs in the emergency department may vary, opening the fellowship to clinically curious nurse practitioners who wish to practice in emergency medicine may bring extra expertise and knowledge to the organization.

Regions' fellowship was designed and implemented in one year, leaving little time for initial analysis, assessments, and curriculum development. The program's design was agreed upon during roundtable discussions between the emergency-department and the critical-care

leadership groups. In retrospect, structured needs-assessment analysis and curriculum development would be beneficial for any program's development.

Fellowship Structure

Regions' fellowship is an 18-month paid residency, where a resident PA is a full-time employee of Regions Hospital. The PA fellow has similar benefits as the ones offered to the medical staff. The fellowship was designed to work in parallel with the medical-doctor (MD) residency and fellowship training that was already established at Regions. The residency guidelines, policies, and duty hours mirror those of the MD EM residency which is accredited by the Accreditation Council for Graduate Medical Education (ACGME). In the past, the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) accredited PA residency and fellowships program. However, there is a current hold on the accreditation process, and no new applications will be accepted until the council restructures its accreditation process (Accreditation Review Commission on Education for the Physician Assistant, 2014). Similarly, there is no current organization that accredits nurse-practitioner fellowship programs. Accreditation status may be useful in some instances, especially where government funding may become available for the program.

PA fellows are paid 50% of the current mid-range industry salary. The PAs undergo a full credentialing process and have full practice privileges. The total length of the fellowship is 18 months, with 9 months spent in didactic and off-site clinical specialty training and another 9 months spent in the emergency department for clinical training.

The fellowship program starts in March, correlating with the start of the MD residency. Ms. Verhoeven emphasized that it would be important to have a similar start date for fellows and residents, allowing the creation of friendships and comradery between the groups' fellowship

students. The PA fellows' rotations correspond with the MD residents' rotations in the following off-site clinical areas:

1. Surgical intensive care unit.
2. Medical intensive care unit.
3. Orthopedics.
4. Cardiology.
5. Rural emergency medicine.
6. Procedure rotation: ultrasound, intubations, and splinting.
7. Clinical simulation.
8. Toxicology
9. Didactic weekly conferences.

The didactic conferences include 4 hours per week of education: journal club, lectures, and grand rounds. While other programs which were examined for this project included formal testing or required reading, this program does not require additional course work. The didactic information is presented by physicians and senior-level physician assistants.

Evaluation

The PA fellows are evaluated throughout their time in the program. A daily performance card is completed by the supervising MD at each specialty clinical rotation. At quarterly meetings, the PA fellows are evaluated on their performance, educational needs, and progress. No formal program evaluation is held, but feedback is gathered from the PA fellows on a regular basis. Salary trends, job satisfaction, and the ease of finding employment after fellowship completion could be measured to assist with the program's evaluation.

Leadership Structure

The fellowship's leadership is divided between two fellowship directors, one of whom is a PA while the other one is an MD. Fellowship directors share approximately 0.2 full-time equivalents (FTEs) in protected time that are solely dedicated to the fellowship's management and development. Including a physician in the fellowship's leadership structure was historic for the program, with no apparent reasons for this decision clarified during this interview. Creating a nurse-practitioner fellowship program that has an MD's direct oversight is not beneficial for the APRN practice model. It could be argued that the APRN fellowship calls for a self-governed APRN leadership structure.

Ms. Verhoeven emphasizes that protected office time for the residency director who is coordinating and managing the fellowship program is essential to the program's success. Additional assistance from a program coordinator or office-support staff member would allow the fellowship to have further success. At Regions, a part-time office assistant covers the PA fellowship and MD residency programs, coordinating schedules and paperwork.

Discussion

Regions' PA fellowship draws an average of 15-20 applicants per year and accepts four PA-fellow residents per year. Despite the low reimbursement, the program draws highly qualified applicants who are in the top five percentiles of their graduating classes. The retention and recruitment of valuable graduates have greatly benefited the organization. At least one graduating PA fellow per year is hired for a permanent staff position at the end of the program. Since the program's inception, staff-recruitment costs have decreased while the quality of the retained talent has increased.

The educational benefits for the residents who complete this training cannot be overemphasized. However, this program does not track whether graduates obtain jobs after graduation or if their pay scale and salary reflect their post-graduate training. While it can be argued that PA residents are not only productive, but also a cost-effective addition to the institution, their revenue for the organization is not currently tracked. It would be beneficial to implement the above-mentioned evaluation details when creating new fellowships.

In addition, Regions' PA fellows are required to staff every emergency-room patient with a supervising MD. MD staffing allows for visit billing at a higher reimbursement rate. Not all Minnesota institutions follow this practice model, and healthcare organizations are embracing a ACP direct-billing approach. If the revenue per hour is not tracked for the advanced-care providers, the institution cannot make an informed decision about the cost effectiveness of the fellowship program or the employment of advanced-care providers. At Regions, physician assistants treat about 40% of the emergency department's patients, making the advanced-practice group an important part of the institution's revenue. These contributions must be reflected in the financial, budget, and payment considerations.

Sharing didactic education time, clinical experience time, and procedure experience with MD residents can create several difficulties. MD and PA residents desire procedure experience, and MDs may be given preference over the PAs when procedure experience is available. Lack of procedural experience may create tension between the two groups as well as feelings of resentment towards the program. The importance of didactic learning for any residency or fellowship program cannot be overlooked. The learning modules which augment the clinical experience are beneficial, and simulation labs serve as a link between education and practice, especially with procedural education.

Overall, Regions fellowship program has a robust structure which is geared toward educating competent and confident physician assistants. After 18 months of training, the PA fellows are versed in emergency medicine and have the clinical-practice experience which is desired by healthcare organizations. Regions' program experience can guide the creation of a local fellowship program for nurse practitioners.

APPENDIX C. NEEDS ASSESSMENT SURVEY

Survey Disclosures

My name is Mariya (Masha) Bowen. I am a pediatric nurse practitioner who is currently practicing at Children's Hospitals and Clinics of Minnesota (Children's). I am also a graduate student in the Doctor of Nursing Practice (DNP) program at North Dakota State University (NDSU). I set out to establish a post-graduate fellowship program for nurse practitioners who desire to practice in emergency medicine after graduation. The program is an integral part of my doctoral studies. The program will be implemented at Children's Hospitals and Clinics of Minnesota.

Project Purpose

The purpose of this project is to design and implement at a post-graduate fellowship program for nurse practitioners who want to practice in emergency medicine.

Survey Objectives: As part of the fellowship's development, I am seeking input, via an online survey, from nurse practitioners (NPs) who are currently practicing in emergency medicine at Children's. The survey's purpose is to obtain a basic understanding about the general comfort level and previous clinical experience of Children's NPs. We aim to answer the following question: "What should we include in the design of an in-hospital fellowship program for new graduate NPs?"

This survey is not designed to evaluate the effectiveness of your current orientation process. It is not designed to evaluate the participants' clinical skills or expertise. Participating in this survey is voluntary, and the results of this survey are confidential. The survey is conducted by using an encrypted, online survey platform called Survey Monkey. It should take you 10-15 minutes to complete this survey. No identifying information, including the

participant's name, email address, or IP address, is collected from survey participants. All data are stored in a password-protected electronic format. The survey data are only used for scholarly purposes, and the results are reported as aggregate data. A few survey questions ask the participant to type a response. The potential exists that an individual response may be identifiable to its author. If this situation arises, the author will employ safeguards to protect participant confidentiality and to minimize any risks. There is no monetary reward for completing this survey. However, participant answers will directly contribute to tailoring educational program for new graduates. The results will be shared with the group at the next NP staff meeting.

Contact Information

If you have questions about the survey or project, please email me, Mariya (Masha) Bowen, at Mariya.bowen@ndsu.edu, or contact my adviser, Dr. Tina Lundeen, at 701-231-7747 or email her at tina.lundeen@ndsu.edu. With questions about your rights as a research participant or to report a complaint, please contact the Human Research Protection Program at 701-231-8908 or toll-free at 1-855-800-6717; by mail at NDSU HRPP Office, NDSU Dept. 4000, P.O. Box 6050, Fargo, ND 58108-6050; or through e-mail at ndsu.irb@ndsu.edu

Sincerely,

Masha Bowen

Survey Questions

1. Participation
    a. I agree to take this survey.
    b. I do not want to take this survey.

        (If option b is chosen, the participant is directed to the closing question.)
2. Are you a nurse practitioner who is currently practicing in an emergency department?
    a. Yes
    b. No

        (If option b is chosen, the participant is directed to the closing question.)
3. How long have you been practicing as an NP?
    a. I am a new grad.
    b. 3-12 months
    c. 1-3 years
    d. 3-5 years
    e. More than 5 years
    f. How many years have you been practicing in the emergency department (Only count NP experience)?
    g. I am a new-grad NP.
    h. 3-12 months
    i. 1-3 years
    j. 3-5 years
    k. More than 5 years

4. Did you have staff-nurse emergency experience before graduating from an NP program?
    a. Yes
    b. No
5. Think back to your time in graduate school. Did you have any clinical or practical experience in emergency medicine?
    a. Yes
    b. No
6. Did you have any clinical or practical experience in orthopedics?
    a. Yes
    b. No
7. Did you have any clinical or practical experience in general surgery?
    a. Yes
    b. No
8. Did you have any clinical or practical experience in acute care?
    a. Yes
    b. No
9. Procedures. We would like to know how experience affects new-graduate NPs' skills and comfort level. Think of your first NP position, and calculate the best you can from the first day on your job through orientation and beyond. How long did it take you to become comfortable with the following skills?

Skills	0-2 months	3-4 month	5-6 months	> 6 months	> a year	I am looking for more educational opportunities in this area.
Splinting independently						
Orthopedic care						
Suturing simple wounds independently						
Suturing complex and facial wounds independently						

10. Efficacy and time management

Skills	0-2 months	3-4 months	5-6 months	> 6 months	> year	I am still learning this.
Completing documentation in a timely manner						
Managing more than 4 complex patients at a time						

10. Clinical Skills.

We would like to know how experience affects new-graduate NPs' skills and comfort level. Think of your first NP position, and calculate the best you can from the first day on your job through orientation and beyond. Some of us did not become comfortable with the skills mentioned until after the orientation was completed while some people may have been very comfortable before orientation was done. How long did it take you to become comfortable with the following skills?

Skills	0-2 months	3-4 months	5-6 months	> 6 months	> a year	I am still learning this.
Performing a complete review of systems						
Determining differential diagnoses						
Managing straightforward patients						
Managing complex patients						
Distinguishing OM in 95% of the cases						
Knowing microbial coverage (what drug for what bug)						
Confidently interpreting lab values						
Confidently interpreting X-rays						

Notes. Otitis Media (OM).

11. What would have been helpful to know before starting your ER practice? What should be included in new-graduate training in order to be an effective and confident ER provider?
12. If an emergency-medicine fellowship option would have been available when you graduated, would you have considered it?
    a. Yes
    b. No
    c. Other (please specify)
13. Emergency-medicine fellowships for nurse practitioners would be a valuable training option for new graduates.
    a. Yes
    b. No
    c. Other (please specify)

14. I wish I could have spent part of my ER training learning directly from my physician colleagues in addition to my NP preceptors.
    a. Yes
    b. No
15. I wish I could have spent part of my ER training learning from other disciplines and specialties.
    a. Yes
    b. No
16. I wish I could have spent part of my ER training learning the following:
17. Currently, we have training sessions with plastic surgery and ENT groups. What other specialty areas would be beneficial to include with ER training? Choose all that apply.
    a. Orthopedics
    b. Pediatric Surgery
    c. Radiology (x-ray interpretation)
    d. Endocrinology
    e. Cardiology
    f. General Pediatrics
    g. Pulmonology
    h. Gastroenterology
    i. Anesthesia and pain management
    j. Trauma
    k. Dermatology
    l. OB/GYN

m. Infectious disease

n. Other (please specify)

18. An optional ATLS course would be beneficial to my current practice.

a. Yes

b. No

19. Thank you for taking the survey. Please press “done” to submit it.

Please leave your comments below.

APPENDIX D. ORTHOPEDIC MODULE

Children's Hospitals and Clinics of Minnesota (CHCMN)

Department of Emergency Medicine

Fellowship in Emergency Medicine for Nurse Practitioners

Module II. Orthopedics

Module Title

Evaluation and Treatment of Children with Orthopedic Injuries

Faculty

Please direct any questions about this self-paced module to your orthopedic preceptor or to your fellowship director.

Course Description

The orthopedic module is a self-paced, independent learning activity that focuses on the initial evaluation, stabilization, and treatment of orthopedic emergencies in pediatric populations. Students will become familiar with common orthopedic injuries for each age group, review appropriate orthopedic treatments for those injuries, familiarize themselves with the procedural splinting and casting techniques, and become informed about common complications for those injuries. The program will be delivered with a hybrid or blended approach, where self-directed reading and online evaluation modules will augment hands-on clinical experience for this rotation. The Pediatric Orthopedic Specialty surgical experience will be delivered through a collaborative partnership with the institution's specialty clinics.

Prerequisites

Students will have orientation to the operating room and successful demonstration of aseptic techniques.

Course objectives

Successful participants will be able to

1. Identify common diagnoses for children presenting with an orthopedic or sports-related injury.
2. Obtain an accurate history and perform a comprehensive physical examination.
3. Perform a comprehensive neurovascular assessment and identify the key factors which lead to neurovascular compromise and compartment syndrome in children with long-bone trauma.
4. Demonstrate knowledge about splint-application techniques.
5. Identify the key points for the radiographic assessment of an orthopedic injury.
6. Demonstrate an understanding of the nurse practitioner's role as a first assistant in orthopedic surgery.
7. Monitor the inpatient care for children with orthopedic injuries.
8. Demonstrate knowledge about the common pain medications that are utilized in a pediatric orthopedic-specialty practice, the appropriate dosing of pain medications, and he anticipated side effects.
9. Demonstrate comprehensive communication skills as evidenced by cohesive presentations of patient cases during the orthopedic morning rounds and the ability to coordinate care between disciplines.
10. Provide appropriate discharge instructions and comprehensive anticipatory guidance to the families.

Course activities

Successfully passing this module will require the completion of the following course activities:

1. Read the required book. Magee, D. (2014). *Orthopedic physical assessment* (6th ed.). City, ST: Saunders.
2. Watch online PowerPoint presentations.
    a. "Comprehensive Neurovascular Assessment of Children with Upper- Extremity Injuries" by Mariya Bowen, CNP-AC and CNP-PP, CHCMN.
    b. "Initial Stabilization and Splinting of Extremity Injuries" by Dr. Libby Webber, Gillette Orthopedic Care.
    c. "Pavlik Harness in the Treatment of Infants with Femur Fractures" by Mariya Bowen, CNP-AC and CNP-PP, CHCMN.
    d. "Modified Spica Splint and J-Splint Application in Initial Treatment of Children and Adolescents with Femur Fractures" by Dr. James Engels, CHCMN
3. Complete a 1.0 FTE clinical rotation (2 weeks) with the Children's Orthopedic Service. The schedule, preceptor, and clinical hours will be determined by your fellowship director. The required reading and PowerPoint presentations must be completed before starting the clinical experience. Activities will include
    a. Emergency care: the initial evaluation of children who have orthopedic injures and present to the CHCMN emergency department.
    b. Pre-operative care of pediatric patients with orthopedic emergencies.
    c. Observe the operating-room cases for children with orthopedic injuries.
    d. Acute care: in-hospital treatment of patients with orthopedic emergencies.

e. Patient education: anticipatory guidance, family education, and home discharge for pediatric patients with orthopedic emergencies.

f. Outpatient care: clinic follow-up for children with orthopedic emergencies.

4. View 10 orthopedic-case scenarios which were developed by Virginia Commonwealth University, and complete the mini quizzes associated with each case.

   Link: http://www.mededmasters.com/interactive-modules.html

Course Schedule

Course schedule is arranged by faculty, with clinical experience, reading and course work corresponding to the patient populations admitted to orthopedic service. All work must be completed before starting the emergency-department rotation.

Conceptual Framework

The nurse practitioner fellow will function independently, establishing and meeting his/her own goals while providing competent patient care. The fellow will be a professional scholar and will be motivated towards experiential learning.

Evaluation

The orthopedic module will have a pass/fail grade. Students will be evaluated by their clinical preceptors at the end of their two-week rotation with the orthopedic service. All didactic educational activities must be completed by the beginning of the clinical rotation. Students who fail this rotation will be placed on academic probation, and an improvement plan will be created in coordination with the nurse fellow, the fellowship director, and the emergency-medicine leadership staff. If a fellow fails the module a second time, the fellowship may be terminated.

Academic Honesty Statement

A nurse practitioner fellow is a fully integrated member of the healthcare team at Children's and will be expected to act in accordance with the institution's bylaws and policies. Policies includes Academic Honesty as well as Drug/Alcohol Zero Tolerance Policy 1508.00. Please refer to Children's Policy 1038.00 regarding attendance. In order to maintain a safe and productive work environment," Children's Hospitals and Clinics of Minnesota (Children's) expects employees to be at work on time, and ready to work, for all scheduled shifts. Absenteeism and tardiness are disruptive, place a burden on other employees and the organization as a whole, and may be considered grounds for corrective action up to and including termination of employment" (Children's, 2014).