

EMERGENCY SKILLS COMPETENCY AMONG RURAL NORTH DAKOTA NURSE
PRACTITIONERS

A Dissertation
Submitted to the Graduate Faculty
of the
North Dakota State University
of Agriculture and Applied Science

By

Lindsey Rae Sand

In Partial Fulfillment of the Requirements
for the Degree of
DOCTOR OF NURSING PRACTICE

Major Department:
Nursing

February 2019

Fargo, North Dakota

North Dakota State University
Graduate School

Title

EMERGENCY SKILLS COMPETENCY AMONG RURAL NORTH
DAKOTA NURSE PRACTITIONERS

By

Lindsey Rae Sand

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

SUPERVISORY COMMITTEE:

Adam Hohman

Chair

Mykell Barnacle

Kara Falk

Dan Friesner

Approved:

3/2/2019

Date

Carla Gross

Department Chair

ABSTRACT

Many people with medical emergencies in rural areas would go untreated without the presence of critical access hospitals. Nurse Practitioners employed as rural healthcare providers commonly assume the roles of primary care provider in the clinic and hospitalist and emergency room provider in the critical access hospital. In a rural setting, comprehensive emergency care training is imperative as the nurse practitioner may be the sole provider on-call when a critical patient presents to the emergency room. Increased initial emergency care education and continued sustainment of rural nurse practitioners' emergency skills is essential to the future of rural healthcare and patient safety. The purpose of this practice improvement project was to identify rural nurse practitioners' perceived level of preparedness and competency in implementing emergency skills and develop an emergency skills seminar to increase rural nurse practitioners' perceived level of preparedness and competency in implementing emergency skills. Secondary data analysis of the Rural Nurse Practitioner Skills Needs Assessment, previously administered to rural North Dakota nurse practitioner preceptors, was completed. Analysis of the needs assessment revealed a majority of the rural nurse practitioner preceptors felt unprepared or somewhat prepared in implementing 41 of the 51 emergency care skills within the needs assessment. Analysis of the needs assessment led to the development of the Rural Emergency Skills Seminar, providing education on three emergency skills: Procedural sedation and airway management, cervical spine management, and imminent childbirth and post-delivery care. Participants were rural North Dakota nurse practitioner preceptors and North Dakota State University Doctor of Nursing Practice students. Participants were offered a posttest to complete at the conclusion of the seminar. Comparison of the needs assessment results with seminar posttest results revealed an increased perceived level of preparedness in completing the

emergency skills taught during the Rural Emergency Skills Seminar. The project served to highlight knowledge gaps in emergency care competencies and develop an educational emergency skills seminar for rural nurse practitioners.

ACKNOWLEDGEMENTS

Throughout my doctoral education, I have been fortunate enough to have had several people that have supported, inspired, and encouraged me through this significant and challenging journey. I am grateful for my classmates, educators, and preceptors who provided personal support, professional guidance, and invaluable advice. I want to thank my committee members, Dr. Mykell Barnacle, Dr. Dan Friesner, and Dr. Kara Falk. Their time, insight, and expertise were greatly appreciated through the clinical dissertation process. I want to specifically acknowledge and express thanks to my committee chair, Dr. Adam Hohman, as your expertise, encouragement, dedication, and guidance paved the way for the success of my project.

To my family, I am forever grateful for your love and profound support throughout this journey. Lastly, thank you Michael. I am forever thankful for your belief in my abilities and unwavering support during the ups and downs of my graduate studies. I will always be appreciative to the wonderful people in my life that have supported and encouraged me.

TABLE OF CONTENTS

ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	v
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
CHAPTER ONE. INTRODUCTION.....	1
Background and Significance.....	1
Purpose.....	3
Project Objectives.....	5
CHAPTER TWO. LITERATURE REVIEW.....	6
Introduction.....	6
Workforce Shortages.....	7
The Benefit of NPs to Rural Communities.....	11
Rural Provider Dissatisfaction.....	12
CAH ER Training.....	13
Family Nurse Practitioner Education.....	16
Previous Related Initiatives.....	18
Conclusion.....	19
CHAPTER THREE. THEORETICAL FRAMEWORK.....	21
Benner’s Novice to Expert Theory.....	21
Iowa Model of Evidence-Based Practice.....	24
CHAPTER FOUR. PROJECT DESCRIPTION.....	27
Project Implementation.....	27
Resources.....	31
Congruence of the Project to the Organization’s Strategic Goals.....	31

Protection of Human Subjects.....	32
Institutional Review Board Approval	32
CHAPTER FIVE. EVALUATION	34
Evaluation Methods.....	34
CHAPTER SIX. RESULTS.....	37
Presentation of Findings.....	37
CHAPTER SEVEN. DISCUSSION AND RECOMMENDATIONS.....	50
Interpretation of Results	50
Limitations	55
Recommendations	57
Implications for Practice & Future Research	58
Dissemination.....	61
Application to Nurse Practitioner Role	61
REFERENCES	63
APPENDIX A. COMPETENCIES FOR NPS IN EMERGENCY CARE.....	70
APPENDIX B. RURAL NURSE PRACTITIONER SKILL NEEDS ASSESSMENT.....	73
APPENDIX C. THE IOWA MODEL REVISED: EVIDENCE-BASED PRACTICE TO PROMOTE EXCELLENCE IN HEALTH CARE.....	79
APPENDIX D. UNIVERSITY OF IOWA HOSPITALS AND CLINICS PERMISSION LETTER.....	80
APPENDIX E. INVITATION TO PARTICIPATE	81
APPENDIX F. AANP CONTINUING EDUCATION APPROVAL LETTER	83
APPENDIX G. IRB APPROVAL	84
APPENDIX H. POSTTEST EVALUATION.....	86
APPENDIX I. CURRICULUM EXAMPLE.....	90
APPENDIX J. EXECUTIVE SUMMARY	91

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Timeline of Practice Improvement Project	31
2. Areas of Experience as an RN	38
3. Frequency of Skill Completion	40
4. Perceived Level of Preparedness in Clinical Areas	42
5. Perceived Effectiveness of Teaching Methods	45
6. Suggested Changes to Orientation or Training for Rural Care	52

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Ratio of Population to Providers per HPSA Category.....	8
2. HPSAs within the State of North Dakota	10
3. Agenda for the Rural Emergency Skills Seminar	29
4. Providers' Emergency Care Specific Education Included in Orientation or Training	41
5. Providers' Perceptions if Clinical Area is within Scope of Practice	44
6. Participants' Perceived Level of Preparedness for the Clinical Skill Imminent Childbirth & Post-delivery Care	47
7. Participants' Perceived Level of Preparedness for the Clinical Skill Cervical Spine Management.....	48
8. Participants' Perceived Level of Preparedness for the Clinical Skill Procedural Sedation & Airway Management.....	48
9. Participants' Perceptions if Rural Emergency Skills Seminar Clinical Skill is within Scope of Practice.....	49

CHAPTER ONE. INTRODUCTION

Background and Significance

Many people with medical emergencies and conditions throughout the United States (U.S.) would go untreated without the presence of critical access hospitals (CAHs). The U.S. rural areas cover 97% of the nation's land, consisting of 59.5 million people; which is 19% of the total population who receive care in CAHs (Baernholdt, Keim-Malpass, Hinton, Yan, & Bratt, 2014; United States Census Bureau, 2016). Nurse practitioners (NPs) employed as rural healthcare providers by an organization that consists of both a clinic and CAH often provide services at both facilities (Stock, 2015). The NP commonly assumes the role of a primary care provider in the clinic and as a hospitalist and emergency room (ER) provider at the CAH (Stock, 2015). Rural providers are faced with the challenging task of providing emergency care to patients in CAH's that often operate on a thin financial margin and where disproportionate staffing shortages exist as compared to urban areas (Marsh, Diers, & Jenkins, 2012). "Compared to urban hospitals, rural hospitals have fewer resources but often serve populations with higher prevalence rates of major chronic disease" (Baernholdt et al., 2014, p. 5). Due to nationwide staffing shortages, an aging population, and limited resources, healthcare providers in CAHs are required to put in demanding amounts of time and effort.

According to Marsh et al. (2012), a surge in rural hospital construction commenced due to the passage of the Hospital Survey and Construction Act of 1946. The Hospital Survey and Construction Act of 1946 was developed in response to hospital bed shortages following the end of World War II (Marsh et al., 2012). In order to sustain access to care for rural populations as the financial stress of rural hospitals became pronounced, the U.S. government passed Medicare and Medicaid legislation, followed by the Social Security Amendments of 1983, and finally the

Balanced Budget Act of 1997 (Marsh et al., 2012). The Balanced Budget Act of 1997 created the ability of a state to designate a facility as a CAH with the incentive of advantageous reimbursement rates (Marsh et al., 2012). In order to be considered a CAH, a facility must 1) be a nonprofit or public hospital; 2) be located more than 35 miles, or 15 miles within mountainous terrain or areas with only secondary roads, from another hospital; 3) have emergency care services available 24 hours a day; and 4) provide no more than 25 inpatient beds, delivering inpatient care no longer than 96 hours (unless unable to move due to unforeseen circumstances) (Balanced Budget Act, 1997; Marsh et al., 2012).

Further affecting the burden on rural areas and CAHs was the expansion of health coverage to decrease the number of uninsured Americans through a principle component of the Affordable Care Act (ACA) (Newkirk & Damico, 2014). Due to an already present nationwide shortage of healthcare providers, the increase in millions of Americans becoming insured further exacerbated the burden on healthcare providers. In response to both the ACA and the prominence of health professional shortage areas (HPSAs), the Institute of Medicine (IOM) published “The Future of Nursing” report (2010), which included a list of recommendations to improve patient care by increasing the involvement and scope of the nursing discipline. The report’s first recommendation was to remove scope of practice barriers which would allow advanced practice registered nurses (APRNs) to practice to their full level of education and training (IOM, 2010). In response to the IOM’s report release, the Robert Wood Johnson Foundation initiated the “Future of Nursing, Campaign for Action”, which was a call to action to move forward with the recommendations the IOM made regarding APRN scope of practice (2016). The IOM’s report and the Robert Wood Johnson Foundation’s Campaign for Action

have motivated many states to remove practice barriers for NPs to better utilize NPs in rural areas (IOM, 2010; Robert Wood Johnson Foundation, 2016).

The NP's distinct qualifications and thorough education render NPs as prime candidates to improve access to quality care in rural areas (Marsh et al., 2012). The removal of scope of practice barriers has positively impacted the ability of NPs to provide patient care; however, not all states have initiated the recommended policy changes. North Dakota does allow full scope of practice for NPs. As a result of the reduction in scope of practice barriers, healthcare organizations are increasing their utilization of NPs, particularly in rural areas where provider shortages are prevalent. Rural NPs are required to be competent in a multitude of skills with increased independence and care of multiple disciplines in rural settings. A critical issue for new NPs, particularly new rural NPs, is preparation for practice, which often produces feelings of frustration and inadequacy (Hart & Bowen, 2016). A lack of confidence in emergency skills and procedures due to the infrequency of use, irregular competency validation, and the lack of structured training causes discomfort and increases risk for patient safety (Hart & Bowen, 2016).

Purpose

In a rural setting, effective and comprehensive emergency care training is particularly important, as the NP may be the sole provider on-call when a critical patient presents to the emergency room. When compared to critical care NPs who are optimally educated for ER care with extensive acute care curriculum and clinical hours, family nurse practitioners (FNPs) working for CAHs are often required to provide emergency care with minimal emergency care specific education, as emergency care is not thoroughly covered in the FNP curriculum (Stock, 2015; Hoyt & Proehl, 2015). FNP programs prepare the experienced registered nurse (RN) to become an entry-level novice NP competent in implementing clinical practice skills (Stock,

2015). A novice nurse, as defined by Benner (1984), lacks experience in and exposure to situations, and requires structured guidelines to direct performance. A newly graduated Doctor of Nursing Practice (DNP) FNP has met the educational and DNP requirements deemed essential to be able to practice as a competent FNP. Furthermore, FNP programs throughout the nation widely vary in their amount of emergency care competencies (Wolf, Delao, Perhats, Moon, & Carman, 2017). Along with minimal emergency care content, there is fragmented and significant variability in the job training of NPs as they transition from student to advanced practitioner (Wolf et al., 2017). Limited resources, staffing shortages, lack of adequate emergency care education/training, and more independent practice exposes the need for rural NPs working in CAHs to remain current on best practice methods in emergency care. In order to maintain proficiency in emergency skills, increased initial training and continuing medical education in CAHs must be present to support rural NPs and patient safety (Carter, Cassidy, & Bhimani, 2012; Joansson, Karrieainen, & Kyngas, 2013). Laustsen (2013) found developing evidence-based NP program content and competencies could be guided by gathering information on clinical skills and procedures from current practicing NPs. Furthermore, obtaining data on variances in clinical skills and procedures used by urban versus rural NPs may provide important data on expected practice needs (Laustsen, 2013).

In response to the IOM's recommendations and the need for more providers in rural areas, FNPs, who may have insufficient training and limited emergency care education, are expected to provide emergency care services, hospital rounding, on-call time, and clinic hours. Although rural FNPs in the ER may experience low patient volumes, low patient volume does not rule out high patient acuity. Rural NPs are finding much more is expected of them than working forty-hour weeks at a rural primary care clinic. This places stress on rural NPs, causing

many to look to urban areas for employment (Stock, 2015). Increased initial emergency care education and continued sustainment of rural NPs' emergency skills is essential to the future of rural healthcare and patient safety.

Project Objectives

Objective One

Identify rural NPs' perceived level of preparedness and competency in providing emergency skills at a rural healthcare facility.

Objective Two

Develop and implement an evidence-based emergency skills educational seminar based on perceived NP needs.

Objective Three

After attending the evidence-based emergency skills seminar, the rural NP's perceived level of preparedness and competency in implementing the emergency skills will increase.

CHAPTER TWO. LITERATURE REVIEW

Introduction

Rural areas are defined by the United States Census Bureau (2017), as “any population, housing, or territory not in an urban area” (The Rural Definition section, para. 2). The smallest urban category, “Urban Clusters”, is defined as having a population of less than 50,000 but at least 2,500. Consequently, rural can be understood as having a population of less than 2,500 people (United States Census Bureau, 2017). Currently, there is a shortage of rural healthcare providers available to provide care for rural residents who have been shown to have increased health disparities and fewer opportunities to access healthcare (Bae, 2016; Rural Health Information Hub, 2017; Nelson, 2016). Rural residents are more economically disadvantaged, more likely to be uninsured, have high rates of poverty, and are more elderly (Bae, 2016; Stock, 2015). When compared to urban populations, rural communities have poorer overall health, higher rates of chronic illness, and are more likely to smoke, abuse alcohol or other substances, be overweight, and be less physically active (Rural Health Information Hub, 2017).

Healthcare providers who are responding to the need for increased coverage in rural areas must not only act as primary care providers (PCPs) but ER providers as well. Health workforce shortages, lack of regular ER training in CAHs, and lack of emergency care education in FNP programs are causing NPs to become dissatisfied in rural settings. A review of current literature demonstrated a lack of readily available resources that identified rural healthcare providers’ emergency skills competency and preparedness. Keywords utilized in research included: nurse practitioner, emergency care, competencies, rural, North Dakota, and critical access hospital. Databases used included PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), EBSCO, and Cochrane Library. Fifty-five resources were reviewed with two articles

found specifically addressing rural NP emergency care competencies. No articles were found specifically addressing rural ND NP emergency care competencies. In the following review of literature, rural healthcare physicians, physician assistants (PAs), and NPs will be discussed collectively as rural providers due to the lack of specific rural FNP emergency care competency literature.

Workforce Shortages

Access to health care continues to be a concern in the U.S. where nationwide healthcare provider shortages exist. The Health Resources Services Administration (HRSA) (2017) has developed criteria to assess whether a geographic area, facility, or population group is categorized as an HPSA. A shortage of dental, mental health, or primary medical care areas comprise an HPSA (HRSA, 2017). Criteria to achieve an HPSA designation must include: 1) be a rational area for the delivery of service, 2) have a certain ratio of population to providers serving the area determined to qualify as a shortage (Figure 1), and 3) demonstrate that health professionals in contiguous areas are inaccessible, over-utilized, and excessively distant (Ryan, 2016). “Designated Health Professional Shortage Areas Statistics” by the HRSA show that 59.29% of the nation’s Primary Medical HPSAs are classified as rural, with an additional 3,372 providers needed to remove the rural HPSA designations, and 11,829 providers needed to remove all primary medical HPSA designations (HRSA, 2017). Within the state of ND, 47 of the 53 counties, 89%, contain a designated HPSA (Figure 2) (Center for Rural Health, 2018).

2

Ratio of Population to Providers
What are the ratios?

Each HPSA category has a unique **ratio of population to providers**, which has been identified as the point at which it can be designated as having a shortage of health professionals.

	Primary Care	Mental Health	Dental Health
Geographic	3,500:1	6,000:1 & 20,000:1 CMH and Psychiatrists OR 9,000:1 30,000:1 CMH only Psy only	5,000:1
Population	3,000:1	4,500:1 & 15,000:1 CMH and Psychiatrists OR 6,000:1 20,000:1 CMH only Psy only	4,000:1
Facility	1,000:1	2,000:1	1,500:1
	<i>Min Pop 500</i>	<i>Min Inmate Pop 250</i>	<i>Min Pop 1,000</i>

Figure 1. Ratio of Population to Providers per HPSA Category (Ryan, 2016)

The U.S. population continues to steadily increase with a lack of proportionate growth in healthcare provider numbers. The Association of American Medical Colleges predicts a national shortage of 45,000 PCPs by the year 2020 and a prediction that shortages will continue to increase (Marsh et al., 2012). Future shortages are being exacerbated by medical students moving toward specialties and away from primary care (Marsh et al., 2012). Further increasing the demand for providers is the aging baby boomer population requiring more medical attention as they reach seniority (Baker, Schmitz, Wasden, MacKenzie, & Morris, 2011; Bae, 2016). “The United States Census Bureau predicted the United States population of age 65 years or older will grow by 60% between 2000 and 2030” (Baker et al., 2011, p. 9). According to the 2010 Census, more than 17% of rural residents were 65 or older, compared with 13.7 % of the total U.S. population (U.S. Census Bureau, 2012). In addition to a lack of available PCPs nationwide, a severe shortage exists in rural areas, and trends are not shifting to compensate for the demand of rural health services (Stock, 2015). The increased risk and health disparities from rural residents make improving access to healthcare in rural areas imperative.

A challenge of increasing access to healthcare in rural areas has intensified with added difficulty in recruitment and retention of PCPs (Marsh et al., 2012). The ability to offer competitive wages and benefits is inhibited at rural sites due to lower operating margins as compared to urban settings (Stock, 2015). State and local governments have developed various incentives such as federal loan waivers and bonus reimbursements to promote providers to work in rural areas with minimal success (Baker et al., 2011). Research has found incentives are being utilized by providers that already planned to work in a rural area (Baker et al., 2011).

Rural North Dakota Healthcare

North Dakota is a largely rural state with a widespread healthcare provider shortage that is further burdened by providers trending towards more urban areas of practice. (Figure 2) (Marsh et al., 2012). According to the North Dakota Board of Nursing, 1,354 APRNs are licensed in ND; 907 of these APRNs are licensed NPs (2018). Of the practicing NPs in ND, 69.7% are practicing in urban areas and 31.3% are practicing in rural areas (North Dakota Nurse Practitioner Association, 2016). According to the University of North Dakota School of Medicine and Health Sciences Advisory Council (2017), the national ratio of NPs per 10,000 population is 5.8, which is higher than the ND rate of 5.4. In metropolitan counties, the ratio is 8.4 NPs per 10,000 population; whereas rural counties exhibit a ratio of 4.8 NPs per 10,000 population. Furthermore, the ND Community Health Needs Assessment identified health workforce as the third-ranked statewide need (Gibbens, 2017). The health workforce category entailed physician and provider recruitment and retention, PCP need, specialty care access, and more (Gibbens, 2017). According to Gibbens (2017), healthcare workforce continues to be a chronic need identified in the ND Community Health Needs Assessment administered in previous years. The top healthcare need for ND that was identified in the needs assessment was

behavioral health (alcohol and/or drug abuse), with mental health coming in second, supporting the need for more widespread access to all types of healthcare (Gibbens, 2017).

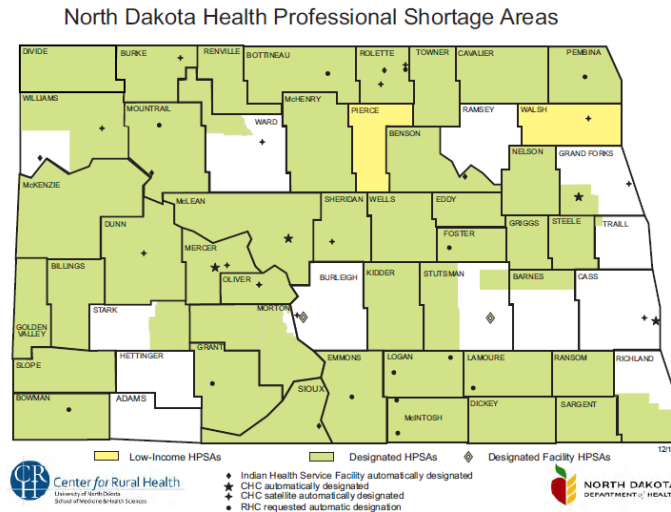


Figure 2. HPSAs within the State of North Dakota (Center for Rural Health, 2018)

Critical Access Hospitals

Over 1,300 rural hospitals nationwide have converted to a CAH with the development of the Medicare Rural Hospital Flexibility (Flex) program as a result of the Balanced Budget Act of 1997, which provides financial aid to rural healthcare systems (Center for Rural Health, 2012a). The Flex program was designed as a process to designate rural hospitals as CAHs, form a state rural health plan, and develop at least one rural health network in every state operating a Flex program (Center for Rural Health, 2012a). In addition, the Flex program provides technical assistance to strengthen both CAHs and rural health delivery systems within the state (Center for Rural Health, 2012a, Center for Rural Health, 2012b). In ND, 36 rural hospitals have converted to CAHs which consists of all but two of the rural hospitals in ND (Center for Rural Health, 2012b). According to the Center for Rural Health, when compared to other CAHs nationally, ND CAHs tend to experience more financial constraints. A common measure to identify financial

constraints is operating margin. Overall, 63% of ND CAHs have a negative operating margin, as compared to 52% nationally (2012a). When surveyed, administrators of ND CAHs have identified money and health workforce issues facing rural hospitals as their two primary issues in the years of 2005, 2008, and 2011 (Center for Rural Health, 2012b). A survey administered to ND CAH administrators in 2011 found 62% of CAH administrators indicated a severe problem with physician workforce supply (Center for Rural Health, 2012b). CAHs have a significant impact on rural communities because they serve as the primary access point for local health services and produce, on average, 224 jobs (Center for Rural Health, 2012a). Addressing the healthcare workforce shortages in ND's CAHs and providing adequate education and training for the rural provider is imperative for retention and the safe, high-quality patient care for which NPs are more than suitable to assume this role.

The Benefit of NPs to Rural Communities

The APRN role, which was first created in the 1960s, has created an opportunity to improve access to healthcare and decrease costs while providing quality care (Stock, 2015). Unfortunately, according to the “Fourth Biennial Report on Health Issues for the State of North Dakota”, the “expectation that advanced practice providers (APPs) would compensate for the sometimes severe shortages of physicians in rural areas is only partially realized” (UND School of Medicine and Health Sciences Advisory Council, 2017, p. 68). Researchers have recognized that patients cared for by NPs are more satisfied with the care they receive and exhibit equivalent patient outcomes as compared to physician delivered care (Hart & Bowen, 2016; Marsh et al., 2012). “Multiple studies have found that access to quality care can be greatly expanded by increasing the use of RNs and APRNs in primary care, chronic care, and transitional care” (Marsh et al., 2012, p. 190). However, varying degrees of practice regulations and differentiating

scope of practice barriers nationwide have been a hindrance to NPs increasing the total number of providers (Marsh et al., 2012). Yet research has shown that variances in scope of practice regulations do not affect patient outcomes and the states that dictate greater practice restrictions have shown no evidence of delivering improved or safer care than states with fewer restrictions (Marsh et al., 2012). In addition, healthcare system forces such as PCP shortages, improved NP reimbursement, and patient acceptance of NP-delivered care have led to the evolution of the autonomous NP role (Laustsen, 2013). By allowing NPs to practice to the full extent of their practice, NPs can provide patients with better access to high quality care, and at a lower cost for the healthcare facilities. Marsh et al. (2012) estimated that hospitals that staff an ER with an APRN could immediately save the facility approximately \$300,000 per year. CAHs are utilizing NPs to save their facility from having to turn patients away due to the lack of providers, which simultaneously saves the CAH money. NPs who answer the need for providers in rural areas and give their time to CAHs are ensuring many rural citizens get both the primary and emergency care they need.

Rural Provider Dissatisfaction

Due to physician shortages, CAHs are depending on NPs and PAs to fill staffing needs in their ERs, often causing APPs to be the only provider on site when a critical patient arrives (Nelson & Hooker, 2016). In the rural setting, NPs are expected to assume multiple roles and act as “expert generalists” (Stock, 2015). Accruing hours in the rural clinic, CAH, and ER requires that rural providers undertake the care of multiple disciplines, all age ranges, various acuity levels simultaneously (Stock, 2015). As a result of less competition, a broad scope of practice, and more clinical independence, a great deal is required of a rural provider, leading to work-related stress and dissatisfaction, which negatively affects retention (Baker et al., 2011). New

graduate NPs answering the call to address shortages and work in rural areas experience high rates of anxiety that can result in burnout (Stock, 2015).

The remoteness of rural areas can also impact rural NP dissatisfaction as colleagues are located at greater distances, making it difficult to discuss patient care options from one provider to another when needed (Laustsen, 2013). Telehealth services allowing for provider-to-provider communication are available at many rural emergency rooms; however, the rural NP is ultimately the provider to implement patient care. Rural NPs are required to be competent in a multitude of skills and disciplines in rural settings. A lack of confidence in emergency skills due to infrequency of use, irregular competency validation, and lack of structured training are causing rural provider discomfort (Hart & Bowen, 2016).

CAH ER Training

In a rural setting in which there is limited resources for patients with increased health disparities, further clinical independence and the structured training of providers is imperative. Wolf et al. (2017) report there is minimal information that has been published concerning training and validation of FNPs' skills and competencies who work in the ER. In 2010, the Emergency Nurses Association (ENA) completed a Delphi-study that identified entry-level emergency competencies for NPs (Hoyt, Coyne, Ramirez, Peard, Gisness, & Gacki-Smith, 2010). The 60 competencies are divided into ten categories, including behaviors, knowledge, and skills that an NP should have to practice in the emergency room (Appendix A) (ENA, 2008). Although these competencies identified by the ENA are now the basis for board certification as an emergency nurse practitioner (ENP), there remains an apparent lack of research which defines what FNPs are doing in ER practice and what their professional training entails (Hoyt & Proehl, 2015; Wolf et al., 2017).

One argument against increasing CAH ER training is the training and resources that a CAH needs to proficiently educate a rural NP is not financially justifiable because patients requiring extensive emergency care are often transferred from CAHs to a hospital with a higher level of care. However, one of the barriers to rural healthcare is the distance between rural facilities and an advanced level of emergency care. For example, the distance from a rural facility such as Carrington, ND to an urban center in Fargo, ND, is 142 miles. The transport time between those two facilities would be approximately two hours twelve minutes to travel by ground and 50 minutes by helicopter (Sanford Air Med Staff, personal communication, May 7, 2018).

However, the time a patient spends in the CAH ER is a crucial time where accurate, timely care is imperative. The initial hour following a traumatic injury, referred to as the “golden hour”, is the time in which the patient must receive definitive care to significantly decrease morbidity and mortality (Rogers & Rittenhouse, 2015). The introduction of telehealth services has contributed to the care of rural ER patients by offering rural providers the ability to consult with an expert. Nevertheless, the hands-on care an NP provides before transferring a patient to a higher level of care has a substantial impact on the patient’s clinical outcome.

Wolf et al. (2017) studied the experiences of NPs in emergency care settings and found most of the training for both indirect and direct skills occurs in the practice environment. The NP participants in his study described procurement of their advanced practice skills through brief seminars during their education, learning from their preceptors or colleagues, or through independent learning (Wolf et al., 2017). The NP participants also voiced an insufficiency in the amount of skills preparation during their educational programs and a variability in training when transitioning from a student to a provider (Wolf et al., 2017). Wolf et al.’s research identified an

existing large gap between the validation of NP skills competency compared to what is expected in emergency care settings (2017). Further research must be completed to delineate NP emergency care training and competency validation in rural areas where ER patients are less frequent and often more ill given their comorbidities.

For many rural providers, basic life support (BLS), advanced cardiovascular life support (ACLS), pediatric advanced life support (PALS), and advanced trauma life support (ATLS) or comprehensive advanced life support (CALS) are the only course certifications completed on a regular basis, every two to four years, that provide emergency care education. Provider contracts often offer reimbursement for continuing education conferences; however, rural providers may not be able to physically attend conferences regularly due to staffing shortages or the need to cover the ER. BLS is a basic course that provides the foundation for caring for a patient in cardiac arrest (American Heart Association [AHA], 2014a). ACLS is titled an advanced course, building on the education attained in BLS. ACLS is intended to enhance the learners' skills in both the recognition of and intervention for post-cardiac arrest, acute arrhythmia, stroke, and acute coronary syndromes (AHA, 2014b). PALS teaches the learner to provide high-quality child and infant cardiopulmonary resuscitation (AHA, 2018). ATLS provides organized and succinct training for the immediate care and management of a trauma patient (American College of Surgeons [ACS], 2018). CALS provides education specific to the rural, remote healthcare worker in the ER (CALS, 2019). All the above courses provide imperative education for providers that care for patients in the emergency room. However, to maintain certifications, a refresher course is required only every two years for BLS, ACLS, and PALS and every four years for ATLS and CALS (AHA, 2014a; AHA 2014b; AHA, 2018; ACS, 2018; CALS, 2019).

The education future NPs receive, as described by Stock (2015), prepares them for taking board exams and transitions the students to become entry-level NPs. Organizations must make it their duty to provide jobsite training and validate emergency care competencies to promote well-educated, safe patient care. The entry-level emergency competencies for NPs developed by the ENA (2008) can aid in this process.

Family Nurse Practitioner Education

Further strengthening the need for regular training and competency validation is the presence of FNPs working in rural areas where healthcare providers are required to complete hospital rounding, on-call hours, and ER coverage on top of the primary care they provide. An FNP's education, whether masters or doctorate prepared, does not commonly provide thorough curriculum on the topics of acute, critical, or emergency care. In the ER setting, there are many domains of care a provider is required to implement, including primary care, urgent care, behavioral medicine, public health, social medicine, and emergency care (Hoyt & Proehl, 2015). An FNP certainly has competencies in the above domains; however, NPs working in an ER should ideally demonstrate ENP competencies (Hoyt & Proehl, 2015).

The focus of an FNP's education program is to prepare the student for primary care conditions; the program usually does not include education on the management of complex and medically unstable conditions (Evans, Hoyt, Wilbeck, Campo, & Ramirez, 2015). NPs prepared in the acute care NP programs have competencies differing from those prepared for primary care roles, which includes clinical and didactic practice in acute care settings (Hoyt & Proehl, 2015). The acute care NP is educated to provide care for patients who are physiologically unstable, critically ill, technologically dependent, or experiencing chronic complex illness (University of Texas Arlington, 2018). The variances in educational competencies from an acute care nurse

practitioner to an FNP have led some FNP universities to develop and implement didactic and clinical content covering urgent and emergency care (Evans et al., 2015; Hoyt & Proehl, 2015).

FNPs can also obtain the emergency skills and knowledge that is required for proficient practice by “completing an ENP graduate program, attending a structured emergency fellowship program, or by obtaining continuing education in critical care while working within the EDs” (Evans et al., 2015, pg. 4), ultimately demonstrating ENP competencies through certification. In order to be eligible to become ENP certified, as designated by the American Academy of Nurse Practitioners National Certification Board (AANPCB), the NP must meet criteria for one of three options:

- Option 1: A minimum of 2,000 direct, emergency care clinical practice hours as a certified NP in the past five years; evidence of 100 hours of emergency-related continuing education credits; and a minimum of 30 continuing education credits in emergency-related procedural skills within those five years.
- Option 2: Completion of an approved academic emergency care graduate or post-graduate NP program.
- Option 3: Completion of an approved emergency fellowship program (AANPCB, 2018).

The likelihood that an FNP working in a rural setting has completed an ENP graduate program or emergency fellowship program is minimal. There is a lack of research assessing the number of rural FNPs that have completed either of these programs, further justifying the need for emergency care education curricula, continuing education, and thorough on-the-job training (Olson, 2015). One must reiterate that FNP programs certainly prepare NP students as competent, skilled NPs prepared to practice. However, further emergency care education is

needed to support the novice FNP working in a rural area to evolve into an NP proficient in providing emergency care.

Previous Related Initiatives

Minimal literature exists regarding nurse practitioner skill or competency evaluation in emergency care. Studies that have been completed have identified the primary learning method for NPs in emergency care as on-the-job training (Olson, 2015). NP certification, site of practice, and training and education were examined by Keough, Stevenson, Martinovich, Young, and Tanabe (2011). The researchers found 5% of the 1,216 NPs surveyed practiced in a nontraditional setting. Of the 5% at a nontraditional practice site, 75% practiced in emergency departments and completed most of their educational preparation through on-the-job training and continuing education (Keough et al., 2011). Online educational modules for the APP in the ER setting have shown increased comfort level in procedural skills and increased content knowledge (Ro, Weiland, & Sin, 2018). Ro, Weiland, & Sin (2018) developed an emergency care educational module consisting of web-based self-directed modules and skills curriculum. In Ro, Weiland, & Sin's study (2018), pre- and posttest evaluations were completed to assess knowledge gained. Mean posttest scores were 25% higher than mean pretest scores, supporting the development of emergency care education to improve APP comfort levels in implementing procedural skills (Ro, Weiland, & Sin, 2018).

Olson (2015) developed an online adult and pediatric trauma module in response to results of a needs assessment sent out to Minnesota APPs practicing in the rural ER. The adult and pediatric trauma module received positive verbal and written feedback from APPs in the rural ER setting (Olson, 2015). A strength of the module was that it provided information on topics rarely seen in the rural setting (Olson, 2015). Another form of education that has been

developed in response to a lack of emergency care education for NPs is the presence of NP emergency care residency programs. ER residency programs are postgraduate programs that provide clinical experience, didactic teaching, mentoring, and skills training specific to the focused area (Olson, 2015). Residency programs typically range from 12 to 18 months in duration (Olson, 2015). Research has extensively determined that NPs provide safe and high-quality care; however, postgraduate residencies could promote a smooth transition to practice and increase provider satisfaction (Wiltse-Nicely, & Fairman, 2015). Mason, Fletcher, McCormick, Perrin, and Rigby (2005) examined emergency care competency levels of NPs before and after an emergency care educational program. The program consisted of two study days, one-on-one teaching sessions with experienced ER staff, and a series of weekly 30-minute teaching sessions by an NP peer. Mason et al. (2005) found significantly improved competency and performance after implementation of the educational program. Participant evaluation was completed by emergency skills stations and written tests (Mason et al., 2005). The study supports the use of emergency education through lecture and skills stations to improve the competency of NPs practicing in the ER. A review of current literature did not find research that evaluated results of emergency care education long term to identify if knowledge or skills were retained or successfully implemented into practice.

Conclusion

A review of literature revealed clear evidence supporting the utilization of FNPs in rural areas to improve accessibility to healthcare. However, evidence also revealed rural NP dissatisfaction regarding the additional requirements a rural provider is required to offer in a rural setting where a CAH exists (Stock, 2015). Rural FNPs are expected to provide hospital rounding, on-call hours, and emergency care services on top of clinic hours. There exists a lack

of regular training in CAH ERs and emergency care education in FNP programs. The requirements of a rural clinic and CAH, as well as the lack of CAH ER training and emergency care education, are causing many rural NPs to look to urban areas for employment (Stock, 2015). Reviewing the literature exposed an evident literature gap regarding rural FNP competencies, particularly related to emergency care. There was no published data regarding rural ND FNP emergency care competency levels and very little data published regarding rural NP emergency care competency levels. The literature gap revealed a need for research to be completed assessing rural ND NP emergency care competency levels.

CHAPTER THREE. THEORETICAL FRAMEWORK

Benner's Novice to Expert Theory

The midrange nursing theory from novice to expert by Dr. Patricia Benner has been evaluated and chosen for application to this project. The novice to expert theory provides a framework, guiding nurses for career and knowledge development (Benner, 1984). Benner's theory utilizes Dreyfus's model of skill acquisition, which defines how an individual begins as a novice and can progress to an expert in his or her profession. There are five stages of proficiency in both Dr. Benner's and Dreyfus's theories: novice, advanced beginner, competent, proficient, and expert (Benner, 1984). The novice to beginner theory is applicable to understanding and improving rural nurse practitioner emergency competency levels because it delineates varying levels of knowledge and identifies what is required to get to the next stage of proficiency, which improves patient care. The five stages of nursing proficiency as described by Benner (1984) are as follows:

- Stage 1: Novice beginners lack experience in situations in which they are required to perform. Novices must be first taught about situations in objective terms that are measurable components of a patient's condition. Typical novice behavior is extremely limited and inflexible, requiring rules to direct performance. The lack of experience and exposure to patient situations is what defines a novice, and only by experiencing can context-dependent judgments and skill be acquired.
- Stage 2: Advanced beginners can demonstrate marginally acceptable performance and understand the aspects of the situation. Aspects are the overall characteristics of a situation that can only be identified by someone that has been exposed to the situation previously. An advanced beginner can rely on their past patient experiences and

connect the possibility of similar patient needs. However, the advanced beginner is unable to take the next step in understanding and applies all aspects as equally important.

- Stage 3: Competence is usually achieved by an individual who has been exposed to similar situations for two to three years and is now aware of future plans and long-term goals. A plan developed by an individual that is competent will be based on considerable mindful, abstract, systematic contemplation of the problem. Competent performers lack flexibility and speed, hindering the ability to cope with possible contingencies.
- Stage 4: Proficient performers can assess situations rather than confining situations to aspects. The ability to perceive is also significant in stage 4. Perspective presents itself by past experiences or situations. The proficient performer's holistic understanding improves decision making as well as the ability to recognize abnormalities and prioritize.
- Stage 5: Experts can apply intuition to situations. Intuition allows the expert to zero in accurately on the problem at hand. Expert performers no longer rely on analytic principles unless new situations arise where past experiences cannot be drawn from or a wrong grasp of the situation occurred. Learning from experts is difficult as their decision making comes from a deep understanding of the entire situation and past experiences, making the explanation of this ability hard to describe. The expert does not perform in awareness of features or rules; his or her performance is fluid, flexible, and proficient (Benner, 1984).

Furthermore, Benner (1984) describes seven domains of nursing practice that provide a rich description of the nursing profession and its widespread caring role. The seven domains are: a) the helping role, b) the teaching-coaching function, c) the diagnostic and patient monitoring function, d) effective management of rapidly changing situations, e) administering and monitoring therapeutic interventions and regimens, f) monitoring and ensuring the quality of healthcare practices, g) organizational and work-role, and h) competencies (Benner, 1984).

Rural NP emergency care competencies and education were evaluated and developed by taking into consideration Benner's novice to expert theory. A better understanding of the beginner rural NP's knowledge, level of comprehension, and ability to perceive was attained. The Rural Nurse Practitioner Skill Needs Assessment survey was administered previously to rural ND NP preceptors as part of the Health Resource and Service Administration Advanced Nursing Education Workforce (HRSA ANEW) grant (Appendix B) (Barnacle & Gross, 2018). Analysis of the Rural Nurse Practitioner Skill Needs Assessment data unveiled the self-perceived level of preparedness rural ND NPs had in implementing emergency care competencies (Barnacle & Gross, 2018). Participants could identify their level of preparedness as "unprepared", "somewhat prepared", "generally prepared", or "very well prepared". The emergency care preparedness levels of rural NPs, as identified by the Rural Nurse Practitioner Skill Needs Assessment, were applied to one of the five stages of Benner's novice to expert theory. Participants who identified themselves as "unprepared" in the survey correlated to Benner's novice beginner stage, "somewhat prepared" responses correlated to the advanced beginner stage, "generally prepared" correlated to the stage of competence, and "very well prepared" correlated to proficient performers. A correlation was not made from the survey responses to the fifth stage of proficiency, expert, because the practice improvement project

centered around lower levels of preparedness. The emergency skills seminar was then more specifically developed to the stage of proficiency that most participants were at as identified through analysis of the Rural Nurse Practitioner Skill Needs Assessment. An NP in the novice stage of proficiency would better understand emergency competency education if the information is provided in objective terms with specific steps to follow, while an NP in the competent stage of proficiency would do better with educational content that has case study experiences that require mindful, systematic contemplation (Benner, 1984). Understanding the stages of role acquisition can aide in progression of nurse practitioners' skills, ultimately improving patient care.

Iowa Model of Evidence-Based Practice

The Iowa Model of Research-Based Practice to Promote Quality Care (Iowa model) was utilized to guide the development of an educational seminar to improve rural NP emergency care skills. Based on Roger's Diffusion of Innovations theory, the Iowa model was developed to guide providers in evaluating and implementing research findings into patient care (Buckwalter et al., 2017). Intent of the model is utilization by providers asking important clinical questions and seeking to improve quality care through systematic use of evidence by applying the model's step-by-step guide (Buckwalter et al., 2017). The model consists of seven steps and three decision points (Appendix C). A user can follow the Iowa model by individually applying each component in an orderly fashion to his or her evidence-based project, stopping at decision points to reassess and determine if one's project can continue to move forward or needs to take a step back. Permission to apply the Iowa Model to this project was requested and attained from the University of Iowa Hospitals and Clinics (Appendix D).

Step 1: Topic Selection

When selecting a topic, application to practice, contribution to improving care, availability of evidence, priority and magnitude of the problem, and the multidisciplinary nature of the problem must be considered (Doody & Doody, 2011). Utilizing FNPs in rural areas is often necessary for the sustainability of a CAH and its ER services. However, the lack of thorough initial ER education and on-the-job training is causing FNPs to look to urban areas for employment, further affecting rural healthcare provider shortages (Stock, 2015). A review of literature revealed a lack of readily available resources identifying rural healthcare providers' emergency skills level of preparedness and competency levels.

Step 2: Forming a Team

For the practice improvement project, the team consists of four committee members: a committee chair, two members, and a graduate appointee. Forming a team is necessary for development, implementation, and evaluation of the selected topic and should include specialist team members and interested stakeholders (Doody & Doody, 2011). The committee chair is a nurse practitioner currently practicing in emergency medicine at a rural setting. The two committee members are both practicing nurse practitioners, one in a rural setting, and both are faculty at North Dakota State University (NDSU) with extensive knowledge in the FNP curriculum. The graduate appointee has widespread experience in research and statistics.

Steps 3 and 4: Retrieval and Grading of the Evidence

Evidence was retrieved through an extensive literature review utilizing electronic databases. Evidence was selected based upon its overall strength of the body of evidence (Doody & Doody, 2011). All resources selected were scholarly articles taken from reputable sources. Recently published data was given priority.

Steps 5 and 6: Developing and Implementing Evidence-Based Practice Standard

Development and implementation of the evidence-based practice improvement project should ideally be a patient centered approach, based upon risk and benefit to the participants (Doody & Doody, 2011). One goal of the project was to increase rural NPs' perceived level of preparedness in completing emergency skills by developing and implementing an emergency skills seminar. Analysis of the Rural Nurse Practitioner Skills Needs Assessment identified rural NP preceptors perceived level of preparedness in 51 clinical procedures and skills (Barnacle & Gross, 2018). An emergency skills seminar was developed in response to the needs assessment results and implemented as a one-day seminar on NDSU's campus.

Step 7: Evaluation

Evaluation was completed through secondary analysis of the Rural Nurse Practitioner Skills Needs Assessment and posttest evaluation of the emergency skills seminar. Data analysis of the needs assessment focused on emergency skills participants felt least prepared in completing. Posttest questions were developed to evaluate efficacy of the educational seminar and allowed for comparison of the needs assessment responses.

CHAPTER FOUR. PROJECT DESCRIPTION

Project Implementation

The emphasis of the practice improvement project was a review and secondary analysis of data from a previously conducted survey, the Rural Nurse Practitioner Skill Needs Assessment, distributed by two assistant professors of practice at NDSU's School of Nursing (SON) (Barnacle & Gross, 2018). Based upon those findings, implementation of an evidence-based emergency skills seminar was completed. An extensive review of the literature reinforced the need for an assessment of rural NP emergency skills competency.

In January of 2018, the Rural Nurse Practitioner Skills Needs Assessment was distributed by two assistant professors of practice at NDSU's School of Nursing (SON) (Barnacle & Gross, 2018). The Rural Nurse Practitioner Needs Assessment was developed by modifying a previously conducted survey created by Gary Laustsen (2013). The Rural Nurse Practitioner Skill Needs Assessment was administered as part of an HRSA ANEW grant to rural ND NPs who had volunteered as preceptors over the last two years (Barnacle & Gross, 2018). The needs assessment concentrated on rural ND NPs' experience, training, and perceived level of preparedness in 51 clinical procedures and skills (Barnacle & Gross, 2018). Participants identified their perceived level of preparedness in the 51 clinical skills as "unprepared", "somewhat prepared", "generally well prepared", or "very well prepared" and were asked to identify if the clinical skill was within his or her scope of practice. Additional questions at the end of the survey allowed for further comments and suggestions for ideal rural emergency care training of providers and any specific skills for which the participant would like to receive training (Appendix B). Identification of the participants perceived level of preparedness

stimulated the development of an emergency skills seminar, ultimately inspiring this practice improvement project.

Secondary analysis of the data from the Rural Nurse Practitioner Skill Needs Assessment was completed as part of this practice improvement project. Data analysis unique to this practice improvement project focused on perceived level of preparedness of implementing emergency skills in order to develop an evidence-based emergency skills seminar. The emergency care preparedness levels of rural NPs, as identified by the Rural Nurse Practitioner Skill Needs Assessment, were applied to one of the five stages of Benner's (1984) novice to expert theory. Participants who identified themselves as "unprepared" in the survey were correlated to Benner's novice beginner stage, "somewhat prepared" responses were correlated to the advanced beginner stage, "generally prepared" were correlated to the stage of competence, and "very well prepared" were correlated to proficient performers. A correlation was not made from the needs assessment responses to the fifth stage of proficiency, expert, because the practice improvement project centered around the emergency care skills that a majority of the participants identified as "unprepared" or "somewhat prepared" to complete in practice. Benner's theory was utilized to develop seminar content appropriate to the stage of proficiency most participants perceived themselves to be at in the Rural Nurse Practitioner Skill Needs Assessment.

For the purpose of this practice improvement project, only three of the emergency skills that a majority of participants felt unprepared or somewhat prepared to complete for their practice were selected for implementation within the seminar, titled "Rural Emergency Skills Seminar". The seminar was limited to three skills in order to keep the content to a one-day seminar. The seminar consisted of three hours of didactic content and discussion and four hours of hands-on skills application (Figure 3).

Rural Emergency Skills Seminar Agenda

8:00-8:55am: Procedural Sedation & Airway Management

9:00-9:55am: Cervical Spine Management

10:00-10:55am: Imminent Childbirth & Post-delivery Care

11:00-11:55am: Separation into four skills stations:

- Imminent Childbirth & Post-delivery Simulation
- Cervical Spine Radiograph Interpretation
- Cervical Spine Immobilization Simulation
- Procedural Sedation & Airway Management Simulation

12:00-1:00pm: Lunch

1:00-3:55pm: Continuation of skills stations

3:55pm-4:00pm: Conclusion, discussion, and post-test completion

Figure 3. Agenda for the Rural Emergency Skills Seminar

Development of the didactic portion of the Rural Emergency Skills Seminar occurred over a two-month time span and took roughly forty hours to complete. The didactic portion consisted of three PowerPoint lectures: Procedural sedation and airway management, cervical spine management, and imminent childbirth and post-delivery care. Four different hands-on skills practice stations were developed for the seminar: Imminent childbirth and post-delivery care, cervical spine radiograph interpretation, cervical spine immobilization, and procedural sedation and airway management. A scenario for procedural sedation and airway management was developed in collaboration with SIM-ND, a mobile simulation lab. SIM-ND provides low frequency-high mortality simulation experiences to CAHs, emergency medical system units, and other medical providers throughout ND (University of North Dakota [UND], 2018b). An existing scenario developed by SIM-ND for imminent childbirth and post-delivery care was utilized for

the seminar. Collaboration with SIM-ND to develop scenarios and the seminar schedule occurred over a two-month time span. The Rural Emergency Skills Seminar was approved for 7.0 contact hour(s) of continuing education (which included 0.5 hours of pharmacology) by the American Association of Nurse Practitioners (AANP). The activity ID is 18093369 (Appendix F). The activity was planned in accordance with AANP Accreditation Standards and Policies. Applying and attaining continuing education contact hours required submission of lecture content, objectives, scenarios, invitations, agenda, and instructor information. The application process for the seminar was completed over a two-month time span.

The seminar was offered to rural ND NP preceptors who had been invited to participate in the Rural Nurse Practitioner Skill Needs Assessment. The implementation of the seminar occurred on NDSU's campus and utilized a variety of teaching methods consisting of PowerPoint, tabletop discussion, and hands-on skills application with high-fidelity mannequins. The recruitment of participants was achieved through the same email distribution list used by the Rural Nurse Practitioner Skill Needs Assessment investigators. The email consisted of an invitation to participate, explanation of the practice improvement project, and specific details of the seminar included as an attachment (Appendix E). The seminar capacity was limited to twelve participants for this practice improvement project due to time and space feasibility purposes. A minimum of ten participants was required in order to have SIM-ND assist with the seminar. As a result of low RSVP rate, current NDSU DNP students were also invited to participate. Email invitation was utilized to invited NDSU DNP students as well. The Rural Emergency Skills Seminar was implemented as a one-day, seven-hour seminar and acted as a pilot study to serve as a baseline for the future development of an elective FNP student emergency skills curriculum. The instructors for the Rural Emergency Skills Seminar included the practice improvement

project committee chair and NPs currently working in the ER setting. The timeline for the practice improvement project is laid out in Table 1.

Table 1

Timeline of Practice Improvement Project

Date of Completion	Intervention
January 2018	Rural Nurse Practitioner Skill Needs Assessment Distribution
May - June 2018	Evaluation and analysis of Rural Nurse Practitioner Skill Needs Assessment
July - August 2018	Development of Rural Emergency Skills Seminar
August – September 2018	Application and attainment of continuing education contact hours
September – October 2018	Collaboration with SIM-ND
November 2018	Implementation of Rural Emergency Skills Seminar
February 2019	Final Defense

Resources

Resources necessary for the hands-on skills application during the seminar were provided by SIM-ND. SIM-ND’s mobile simulation lab provides hands-on training for pre-hospital and hospital personnel to enhance team performance, assure uniform educational opportunities, and provide a non-threatening learning environment (UND, 2019). Collaborating with SIM-ND allowed participants to have access to state-of-the-art equipment while practicing hands-on skills during the Rural Emergency Skills Seminar (UND, 2019). Additional resources included the time commitment from the participants to attend the Rural Emergency Skills Seminar and the instructors and SIM-ND to teach the Rural Emergency Skills Seminar. Both SIM-ND and the instructors volunteered their time and resources for the seminar.

Congruence of the Project to the Organization’s Strategic Goals

The practice improvement project included collaboration with NDSU and SIM-ND. The practice improvement project supports NDSU SON’s mission to “advance nursing knowledge and develop dynamic nurse leaders who improve the health of all people, including underserved, rural, and diverse populations” (NDSU College of Health Professions, 2017). The practice

improvement project supports SIM-ND's goal to improve the emergency care skills of ND's providers (UND, 2018a). In addition, the IOM's "The Future of Nursing Report" (2010) recommendations for the improvement of patient care by increasing nurses' involvement corresponds with the practice improvement project by supporting the need to advance nurses' education and commitment to lifelong learning by providing a platform to enhance emergency care skills. Ultimately, the project aims to provide current and future NPs an educational opportunity to enhance emergent patient care and function in the rural healthcare emergency settings.

Protection of Human Subjects

The project posed minimal risk to its subjects. Participation in the project was completely voluntary and participants were able to withdraw at any time without explanation. Participants were rural NP preceptors in the state of ND and NDSU DNP students. Implied consent was attained by the participants' voluntary attendance of the Rural Emergency Skills Seminar. There was a risk for loss of confidentiality and loss of anonymity during the seminar as participants were face-to-face with other participants. The potential benefits for participants included a free opportunity to expand their knowledge, an opportunity to advance their patient care capabilities, and an opportunity to accrue continuing education contact hours. The importance of the project and knowledge to be gained were explained to participants in the invitation to participate and throughout the implementation of the seminar. Women were included in the study. The inclusion of children did not occur as participants were over the age of eighteen.

Institutional Review Board Approval

The Rural Nurse Practitioner Skill Needs Assessment survey developers completed an Institutional Review Board (IRB) amendment to their study to allow the investigator and

coinvestigator of this practice improvement project access to their data and email list. Two IRB applications were submitted, research involving existing records/data/specimens and research involving human participants, in order to cover both phases of the practice improvement project: Analysis of the Rural Nurse Practitioner Needs Assessment and development and implementation of an emergency skills seminar. The IRB application titled “Research involving existing records/data/specimens”, #PH19003, was needed in order to review and analyze the existing data that was collected by the Rural Nurse Practitioner Needs Assessment. The IRB application titled “Research involving human participants”, #PH19085, was needed in order to receive approval for the utilization of human participants in the Rural Emergency Skills Seminar. The human subjects research project was certified as exempt for IRB approval (Appendix G).

CHAPTER FIVE. EVALUATION

Evaluation Methods

The evaluation of the practice improvement project was completed in two phases, which consisted of a secondary data analysis of the Rural Nurse Practitioner Skill Needs Assessment and a posttest questionnaire evaluating the Rural Emergency Skills Seminar (Appendix H). First, the results of the Rural Nurse Practitioner Skill Needs Assessment survey were analyzed to evaluate emergency skills most frequently utilized by rural NPs, emergency skills rural NPs were least comfortable performing, and what type of emergency skills education participants felt would most benefit rural NPs. The evaluation of the survey responses assisted with development of the seminar. After completion of the seminar, participants were asked to complete a posttest. The posttest was provided in hardcopy form at the end of the class. Time was provided at the end of the seminar for participants to complete the posttest. The posttest evaluated participants' perceptions of knowledge gained and effectiveness of the Rural Emergency Skills Seminar. The needs assessment addressed objective one. The seminar posttest questions were developed to address objectives two and three.

Evaluation of Objective One

The first objective was to identify rural NPs' perceived level of preparedness and competency in providing emergency skills at a rural healthcare facility. Evaluation of the first objective was completed by analysis of the Rural Nurse Practitioner Skill Needs Assessment results. Secondary analysis of the needs assessment data identified rural NPs perceived levels of preparedness in performing emergency skills. The needs assessment asked participants to consider their past experiences from their educational program, work experience, and orientation

or training to identify how prepared they were in 51 different clinical skills that could be performed in an ER setting (Appendix B).

Evaluation of Objective Two

The second objective was to develop and implement an emergency skills educational seminar. The analysis of the Rural Nurse Practitioner Skill Needs Assessment data assisted with development of the Rural Emergency Skills Seminar. The seminar consisted of an evidence-based lecture with the assistance of PowerPoint presentation, tabletop discussion, and hands-on emergency skills application with high-fidelity mannequins through SIM-ND. Evaluation of the seminar was assessed through evaluation of the seminar posttest (Appendix H). Posttest questions six and nine through fifteen evaluated objective two. These posttest questions pertained to the effectiveness of the seminar and the teaching methods utilized, as well as recommendations for improvement and future use of the Rural Emergency Skills Seminar.

Evaluation of Objective Three

The third objective was to increase rural NPs' perceived level of preparedness and competency in implementing the emergency skills taught during the evidence-based emergency skills seminar. The seminar included step-by-step training on three of the 51 emergency care skills that a majority of the participants identified as "unprepared" or "somewhat prepared" to complete in practice. Education was delivered through lectures, tabletop discussions, and hands-on skills application. Evaluation of the third objective was completed by comparing the project's seminar posttest responses (Appendix H) to the Rural Nurse Practitioner Skill Needs Assessment responses (Appendix B), in order to compare perception of skills before and after the Rural Emergency Skills Seminar. By comparing the project's posttest question seven to the Rural Nurse Practitioner Needs Assessment question eleven, the investigator could determine if

participants perceived level of preparedness increased after participation in the Rural Emergency Skills Seminar.

Along with evaluation questions within the posttest that specifically addressed the project objectives, additional questions were developed to collect general demographic information. The demographic information included the number of years practiced, the number of years of practice in a rural setting, frequency of work in a rural ER, average patient volume in the ER, and frequency of implementation of the specific emergency skills taught during the Rural Emergency Skills Seminar.

CHAPTER SIX. RESULTS

Presentation of Findings

The Rural Nurse Practitioner Skill Needs Assessment was delivered electronically through email to 58 rural ND NP preceptors. Over a three-week period of data collection, 18 responses were collected (31.0%); 14 (24.1%) of these responses completed the needs assessment in its entirety. Because the four participants who did not complete the needs assessment in its entirety answered so few of the questions, and for consistency of data analysis, they were excluded from data analysis. For the purpose of this practice improvement project, the 14 responses that completed the needs assessment in its entirety will be included in the data analysis.

The Rural Emergency Skills Seminar posttest evaluation was provided to participants at the end of the seminar. Posttests were handed out in hard-copy form with the goal of increasing posttest completion rate. There were 11 participants for the seminar; 11 posttests were completed (100%). Three of the seminar participants were practicing NPs and eight were current NDSU DNP students. NDSU DNP students were invited due to low NP RSVP rate and a minimum requirement of 10 participants by ND-SIM. Data collection was primarily quantitative; two questions within the posttest were qualitative.

Rural Nurse Practitioner Skill Needs Assessment

Secondary analysis of the Rural Nurse Practitioner Skills Needs Assessment was completed. Of the 14 nurse practitioners who completed the Rural Nurse Practitioner Skills Needs Assessment, six (42.86%) had experience as a RN in the ER setting (Table 2).

Table 2

Areas of Experience as an RN

Areas of RN Experience	Number of Responses	Percentage
ER	6	42.86%
Critical care	8	57.14%
Home health care	1	7.14%
Inpatient medical/surgical unit	8	57.14%
Inpatient pediatrics	3	21.43%
Inpatient maternity	4	28.57%
Other inpatient clinic	1	7.14%
Outpatient clinic	3	21.43%
Public health	0	0.00%
Residential facility	2	14.29%
School/college clinic	0	0.00%
School/college teaching	0	0.00%
Other	6	42.86%

If “other” was selected, participants were asked to specify. Participants identified other areas of experience as an RN of flight nursing, military, occupational, long-term care, telemetry, and oncology. Four of the 14 (28.57%) NPs had over nine years of experience in their current rural position. Four (28.57%) reported six to nine years of experience, four (28.57%) reported three to five years’ experience, and two (14.29%) reported one to two years’ experience. Six of the 14 participants (42.86%) had previous experience as an APP in a rural setting. Providers that had previous experience as an APP in a rural setting were asked to indicate how many years. Two participants had less than a year (33.33%), two had one to two years (33.33%), one had three to five years (16.67%), and one had over nine years (16.67%) of experience. Half of the 14 participants (50.00%) indicated the model of care within their clinical setting was “always at least two providers during operational hours”. Four of these participants (57.14%) indicated being the sole provider with a second individual on call and three participants (42.86%) indicated they had additional provider(s) during busier times of the day or week.

Regarding participants' orientation or training in their current position, 35.71% of participants indicated they had no orientation or training, 50.00% indicated they had 1-40 hours of orientation or training, 7.14% indicated 40-80 hours of orientation or training, and 7.14% indicated three to four weeks of orientation or training. Providers that indicated they had orientation or training for their current position were asked to specify what areas were included in their orientation. The following areas were identified by these participants:

- Urgent care or walk-in clinic
- Long-term care
- Inpatient care
- Family practice or other outpatient clinic
- Emergency care
- Other

The providers that selected "other" were asked to specify the area of training as a written comment. Responses included "electronic medical record training only", "inpatient and long-term care" and "my orientation was considered my clinical rotations there for school".

Rural Emergency Skills Seminar

Of the 11 participants who completed the posttest for the Rural Emergency Skills Seminar, three (27.27%) had over nine years' experience in their current rural position. One (9.09%) had over 9 years of previous experience as an APP in a rural setting. Two participants (18.18%) worked in the rural ER weekly with both participants reporting an average of 0-2 patients per 8-hour shift. Three participants (27.27%) worked in the rural ER less than annually with two of these participants reporting an average of 0-2 patients per 8-hour shift. Question eight in the posttest read: "On average, how often do you complete the following skills in the

emergency department?”. Results from question eight are displayed in Table 3. These results cannot be compared to the Rural Nurse Practitioner Skill Needs Assessment because frequency of skill completion was not assessed in the needs assessment.

Table 3

Frequency of Skill Completion

Skill	More than once a month	Once a month	Once every 2-3 months	Once every 4-6 months	Once every 7-12 months	Less than once a year	I have never performed this skill before in my practice
Imminent childbirth & post-delivery care	0.00%	0.00%	0.00%	0.00%	0.00%	9.09%	81.82%
Cervical spine management	18.18%	9.09%	9.09%	18.18%	0.00%	18.18%	27.27%
Procedural sedation & airway management	27.27%	0.00%	9.09%	0.00%	9.09%	0.00%	54.55%

Objective One

Objective one was to identify rural NP’s perceived level of preparedness and competency in providing emergency skills at a rural healthcare facility. Question ten in the Rural Nurse Practitioner Skill Needs Assessment asked, “If part of your job responsibilities includes covering an emergency department, what emergency care specific education was included in your orientation or training?” (Barnacle & Gross, 2018). Participants could select more than one option. Responses to question ten are shown below in Figure 4.

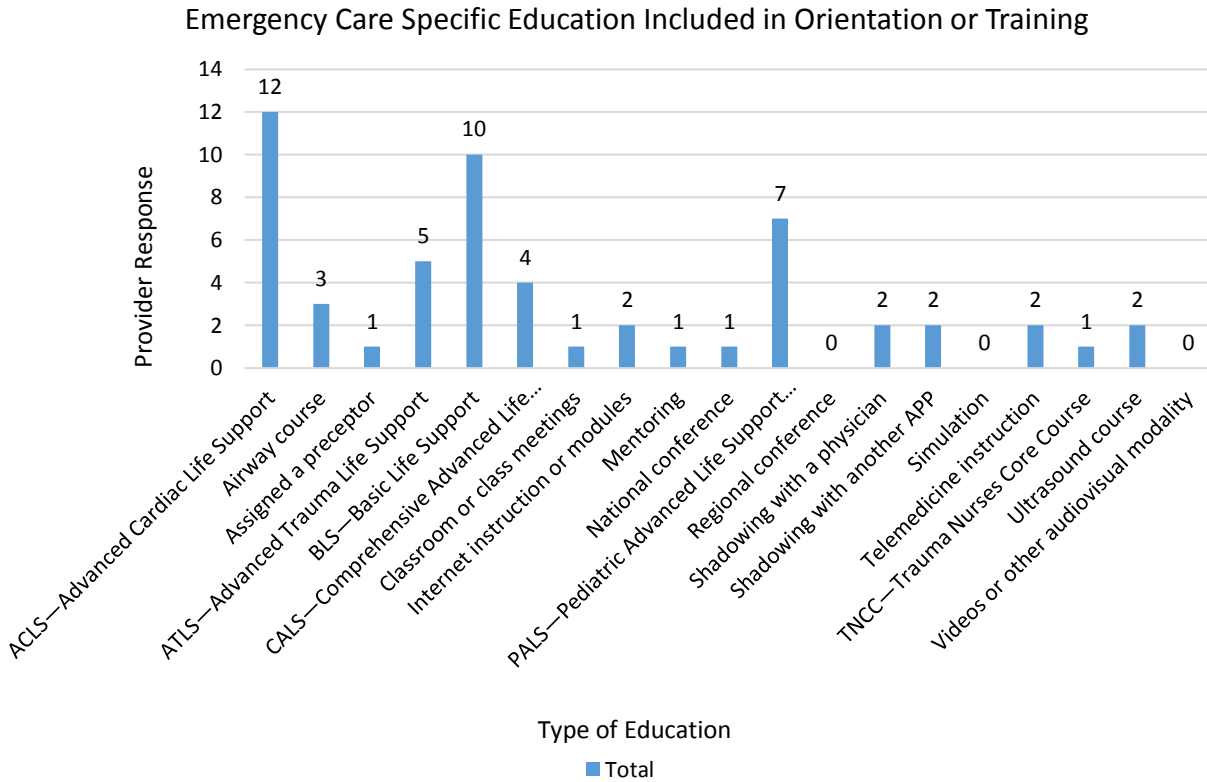


Figure 4. Providers’ Emergency Care Specific Education Included in Orientation or Training

Question 11 in the Rural Nurse Practitioner Needs Assessment asked, “Considering your experiences from your education program, previous work experiences, and your orientation or training in your current position, how prepared were you for actual practice in the following clinical areas?” (Barnacle & Gross, 2018). Participants could select “unprepared”, “somewhat prepared”, “generally well prepared”, and “very well prepared” for 51 clinical skills. Table 4 displays participants’ perceived level of preparedness in the 51 clinical skills.

Table 4

Perceived Level of Preparedness in Clinical Areas

Clinical Area	Preparedness				Total (Frequency)
	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	
EMTALA –specified medical screening exam	14.29%	35.71%	42.86%	7.14%	14
Rapidly changing physiologic status of patient	14.29%	35.71%	14.29%	35.71%	14
Sexual assault exam and preserves evidence	53.85%	46.15%	0.00%	0.00%	13
Laboratory diagnostics—ordering and interpreting	7.14%	14.29%	35.71%	42.86%	14
Pharmacologic and non-pharmacologic therapies	7.14%	7.14%	50.00%	35.71%	14
Electrocardiograms interpretation	21.43%	35.71%	21.43%	21.43%	14
Radiograph interpretation	21.43%	42.86%	35.71%	0.00%	14
CT scans and MRI interpretation	71.43%	14.29%	14.29%	0.00%	14
Manages adult patient in cardiopulmonary arrest	14.29%	28.57%	42.86%	14.29%	14
Manages pediatric patient in cardiopulmonary arrest	42.86%	28.57%	7.14%	21.43%	14
Emergency airways (e.g. King, Combitube, LMA)	42.86%	42.86%	7.14%	7.14%	14
Endotracheal intubation	42.86%	42.86%	7.14%	7.14%	14
CPAP/BIPAP	53.85%	23.08%	7.69%	15.38%	13
Intraosseous access	71.43%	21.43%	0.00%	7.14%	14
Central venous access	57.14%	28.57%	14.29%	0.00%	14
Procedural sedation	7.14%	50.00%	28.57%	14.29%	14
Ultraviolet examination of skin and secretions	14.29%	57.14%	21.43%	7.14%	14
Skin lesions treatment (e.g. ulcers, foot callus, skin tag)	53.85%	23.08%	7.69%	15.38%	13
Lesion excision: Punch biopsy	71.43%	21.43%	0.00%	7.14%	14
Injects local anesthetics	14.29%	35.71%	35.71%	14.29%	14
Nail trephination/removal	21.43%	42.86%	21.43%	14.29%	14
Nail bed closure	53.85%	30.77%	15.38%	0.00%	13
Single layer laceration repair	21.43%	21.43%	28.57%	28.57%	14
Complex or deep wound closure	53.85%	30.77%	15.38%	0.00%	13
Minor burn debridement	42.86%	35.71%	14.29%	7.14%	14
Abscess incision, drainage, and wound packing	14.29%	50.00%	28.57%	7.14%	14
Pupil dilation	38.46%	38.46%	23.08%	0.00%	13
Fluorescein staining	23.08%	53.85%	15.38%	7.69%	13
Slit lamp examination	58.33%	25.00%	8.33%	8.33%	12
Cerumen impaction curettage	14.29%	21.43%	21.43%	42.86%	14

Table 4. *Perceived Level of Preparedness in Clinical Areas* (continued)

Clinical Area	Preparedness				Total (Frequency)
	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	
Epistaxis control	14.29%	42.86%	28.57%	14.29%	14
Cervical spine management	33.33%	33.33%	25.00%	8.33%	12
Bartholin's cyst incision and drainage	53.85%	30.77%	15.38%	0.00%	13
Lumbar puncture	91.67%	8.33%	0.00%	0.00%	12
Imminent childbirth and post-delivery maternal care	46.15%	30.77%	23.08%	0.00%	13
Fecal impaction removal	21.43%	28.57%	35.71%	14.29%	14
Incise thrombosed hemorrhoids	78.57%	21.43%	0.00%	0.00%	14
Digital nerve block	42.86%	28.57%	21.43%	7.14%	14
Fracture reduction	83.33%	8.33%	0.00%	8.33%	12
Dislocation reduction	41.67%	50.00%	8.33%	0.00%	12
Immobilization devices—splints or casts	14.29%	57.14%	7.14%	21.43%	14
Bivalves/removes casts	50.00%	28.57%	21.43%	0.00%	14
Arthrocentesis (knee or elbow)	76.92%	23.08%	0.00%	0.00%	13
Compartment pressure measurement	78.57%	14.29%	7.14%	0.00%	14
Foreign body removal (e.g. eyes, ears, nose, rectum, vaginal)	21.43%	50.00%	28.57%	0.00%	14
Disaster and mass casualty incidents	42.86%	21.43%	35.71%	0.00%	14
Palliative care and end-of-life care	7.14%	50.00%	35.71%	7.14%	14
Acute neurologic disability	42.86%	28.57%	28.57%	0.00%	14
Mental health emergency	42.86%	14.29%	42.86%	0.00%	14
Long-acting reversible contraceptive (LARC) placement (e.g. IUD, Nexplanon)	66.67%	33.33%	0.00%	0.00%	12

In addition to perceived level of preparedness, scope of practice was also assessed as a part of question 11. Participants were asked to identify if they felt each clinical skill was within his or her scope of practice. The average scope of practice response rate was five participants, compared to the average perceived level of preparedness response rate of 14 participants. Scope of practice responses are shown in Figure 5.

Clinical Area within Scope of Practice

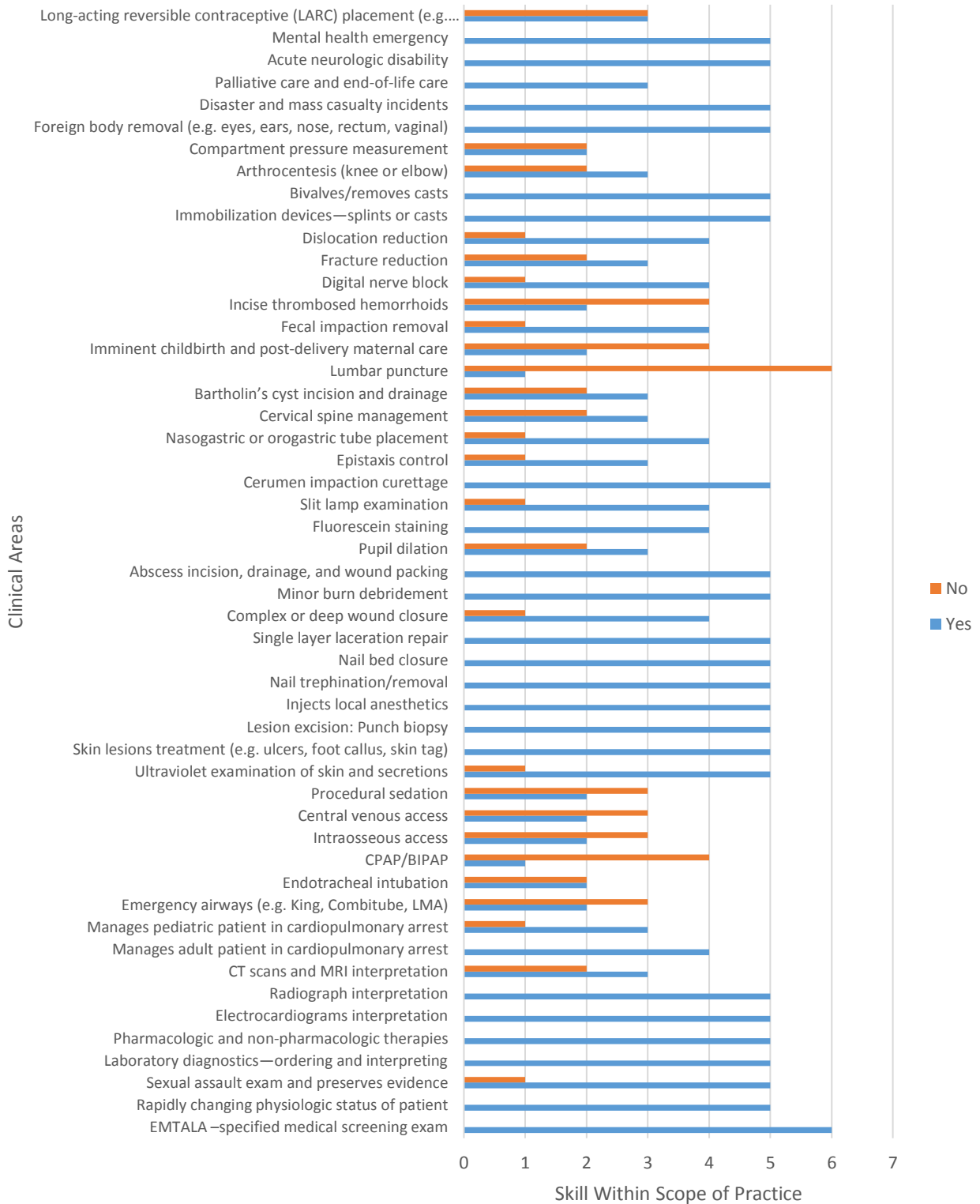


Figure 5. Providers' Perceptions if Clinical Area is within Scope of Practice

Objective Two

Objective two was to develop and implement an evidence-based emergency skills educational seminar. Based upon findings from question 11 in the Rural Nurse Practitioner Skills Needs Assessment, topics were selected for the development of the Rural Emergency Skills Seminar. Clinical skills were considered for the seminar if over 55% of the participants identified to be “unprepared” or “somewhat prepared” to complete in their practice (Table 4). These clinical skills were further refined by assessing if the skills were feasible to complete given the amount of time and supplies needed for the seminar. A clinical skill was not considered feasible if didactic and hands-on education could not be easily developed or taught in a two-hour time frame and if supplies were not readily available through the NDSU SON or SIM-ND. For the purpose of this practice improvement project, three of the emergency skills were selected for implementation: Procedural sedation and airway management, imminent childbirth and post-delivery care, and cervical spine radiologic interpretation and management.

Question six in the Rural Emergency Skills Seminar posttest read, “After completing the educational seminar, I feel more comfortable and competent in implementing emergency care skills”. Seven of the participants (63.64%) strongly agreed and four (36.36%) somewhat agreed with the statement. Participants were asked if the teaching methods utilized in the seminar were conducive to their learning (Table 5).

Table 5

Perceived Effectiveness of Teaching Methods

Teaching Methods	Strongly agree	Somewhat agree	Indifferent	Somewhat disagree	Strongly disagree
PowerPoint lecture	81.82%	9.09%	9.09%	0.00%	0.00%
Tabletop discussion	90.91%	9.09%	0.00%	0.00%	0.00%
Hands-on skills application	100.00%	0.00%	0.00%	0.00%	0.00%

All the participants (100%) reported they would recommend the seminar to their colleagues and felt the seminar would have been beneficial as an NP student. 10 participants (90.91%) felt the level of content in the educational seminar was appropriate for NPs. One of the participants (9.09%) felt the content was too advanced for NPs. Nine of the participants (81.82%) responded “no” to the question, “were there other emergency care competencies you would have rather been educated on?”. If participants selected yes, they were asked to provide a list of the top three skills they would have liked to receive training on. The two participants that selected yes listed “intubation”, “ACLS with limited providers”, “traumatic wounds (gunshot, farm accidents)”, and “COPD exacerbations”.

Objective Three

Objective three was to increase rural NPs’ perceived level of preparedness and competency in implementing the emergency skills taught during the evidence-based emergency skills seminar. The skills taught in the Rural Emergency Skills Seminar were imminent childbirth and post-delivery care, cervical spine management, and procedural sedation and airway management. In order to assess if there was an increase in rural NPs’ perceived level of preparedness, responses from question seven in the posttest were compared to responses from question 11 in the needs assessment (Appendix B & H). In both questions, participants could identify themselves as “unprepared”, “somewhat prepared”, “generally well prepared”, or “very well prepared” to perform emergency care skills in their practice. Imminent Childbirth & Post-delivery Care Perceived Level of Preparedness (Figure 6), Cervical Spine Perceived Level of Preparedness (Figure 7), and Procedural Sedation & Airway Management Perceived Level of Preparedness (Figure 8) compare responses from question 11 in the needs assessment to question seven in the posttest. Comparing these responses identified participants’ pre- and post-seminar

perceived level of preparedness in implementing each clinical skill that was taught in the Rural Emergency Skills Seminar.

Figure 6 displays the needs assessment and seminar participants’ perceived level of preparedness in the clinical skill imminent childbirth and post-delivery care. Over three-quarters of the needs assessment participants (76.92%) perceived their level of preparedness as “unprepared” or “somewhat prepared”. In contrast, after completing the Rural Emergency Skills Seminar, 88.89% of the seminar participants perceived their level of preparedness as “very well prepared” or “generally well prepared”.

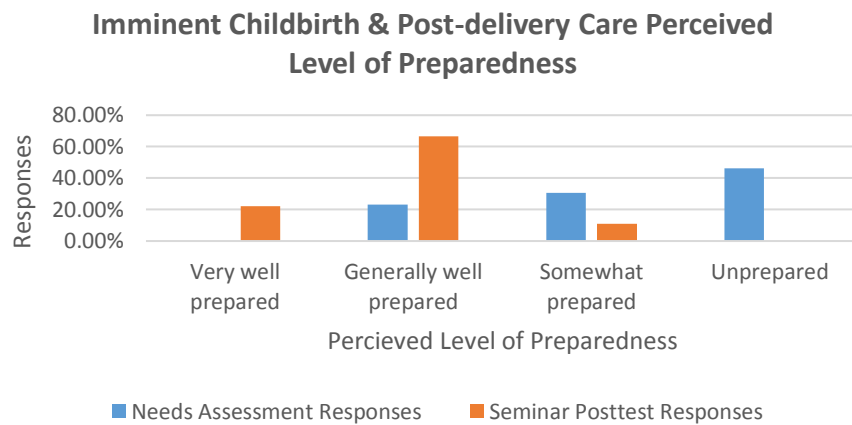


Figure 6. Participants’ Perceived Level of Preparedness for the Clinical Skill Imminent Childbirth & Post-delivery Care

Figure 7 displays the needs assessment and seminar participants’ perceived level of preparedness in the clinical skill cervical spine management. For the clinical skill, cervical spine management, over half of the needs assessment participants (66.66%) perceived their level of preparedness as “somewhat prepared” or “unprepared”. In contrast, over three-quarters of the seminar participants (90.91%) perceived their level of preparedness as “very well prepared” or “generally well prepared” after completing the Rural Emergency Skills Seminar.

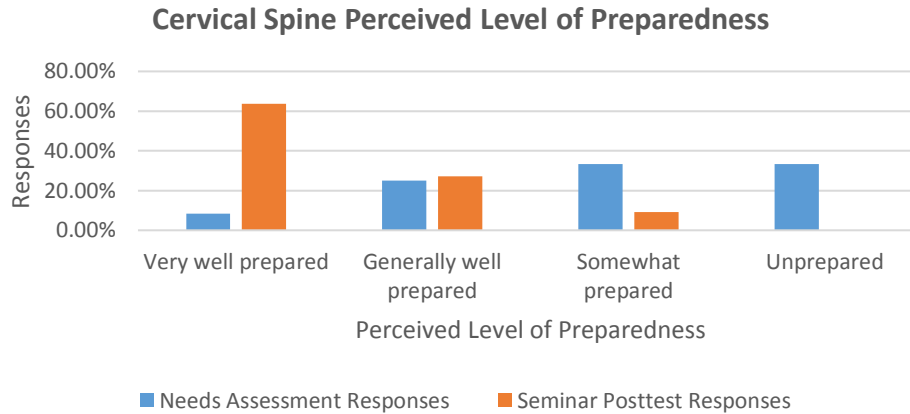


Figure 7. Participants’ Perceived Level of Preparedness for the Clinical Skill Cervical Spine Management

Figure 8 displays the needs assessment and seminar participants’ perceived level of preparedness in the clinical skill procedural sedation and airway management. Over half of the needs assessment participants (57.14%) perceived their level of preparedness as “somewhat prepared” or “unprepared”. In contrast, 81.82% of the seminar participants perceived their level of preparedness as “very well prepared” or “generally well prepared” after completing the Rural Emergency Skills Seminar.

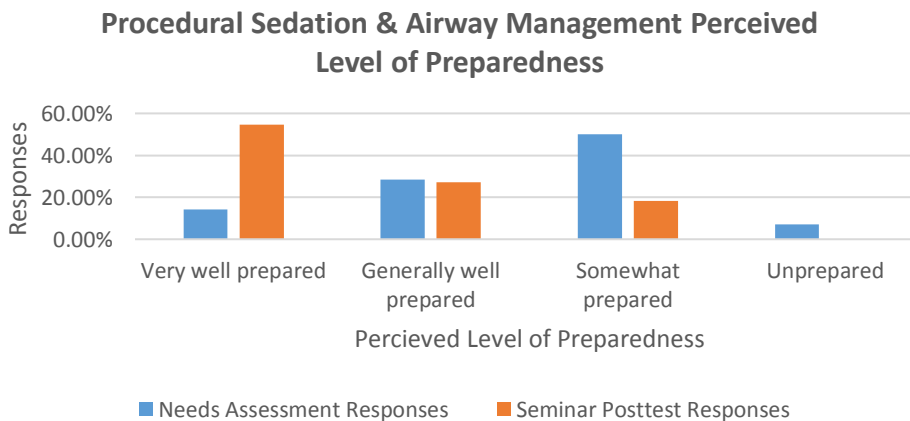


Figure 8. Participants’ Perceived Level of Preparedness for the Clinical Skill Procedural Sedation & Airway Management

Participants were also asked to identify if they felt the clinical skill was within his or her scope of practice. 11 participants completed the seminar posttest; the average response rate to the scope of practice questions was 5.33. Scope of practice responses are displayed in Figure 9.

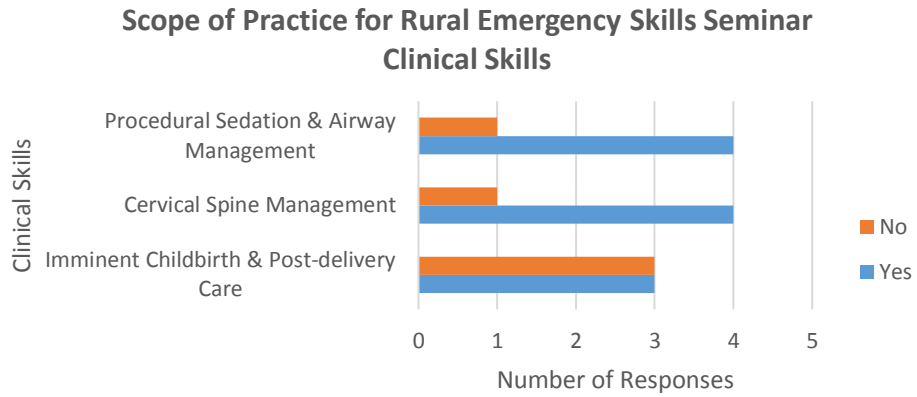


Figure 9. Participants' Perceptions if Rural Emergency Skills Seminar Clinical Skill is within Scope of Practice

CHAPTER SEVEN. DISCUSSION AND RECOMMENDATIONS

Interpretation of Results

The Rural Nurse Practitioner Skill Needs Assessment and Rural Emergency Skills Seminar posttest results were analyzed. Due to the small number of participants and recommendations from an NDSU statistician, statistical analysis was not performed on the data. The data was assessed for any trends or correlations.

Rural Nurse Practitioner Skill Needs Assessment

Responses from the Rural Nurse Practitioner Needs Assessment question 11 assessed participants' perceived level of preparedness in 51 clinical skills (Barnacle & Gross, 2018). Participants' perceived level of preparedness was compared and evaluated for correlation in the following areas:

- Years of experience as an APP
- Years of experience as an APP in a rural setting
- Years of employment in their current position
- Years of experience as a RN
- Years of experience as a RN in the ER
- Amount of orientation and training
- Amount of emergency care specific education

There appeared to be a correlation between years of experience as an APP and orientation and training. Participants that had less than five years' experience in their current rural position tended to have more orientation or training for the position compared to participants that had over five years' experience. This could be due to the evolution of orientation expectations and increased awareness of the importance of orientation or training. Eight participants had over five

years' experience in their current rural position, and half of these participants had no orientation and training and half had only 1-40 hours. However, a correlation was not found between years of experience in participants' current rural position or amount of orientation or training with perceived level of preparedness. There were three participants who selected generally well prepared or very well prepared over 50% of the time for the 51 clinical skills. These three participants all had either ER experience as an RN or ER exposure during orientation or training and at least five types of emergency care specific education completed within their orientation or training. None of these three participants had previous experience as an APP prior to their current rural position. The participant who reported the highest perceived level of preparedness, selecting generally well prepared or very well prepared 65% of the time, reported RN experience in flight nursing. However, there were five participants that had either experience in the ER setting as an RN or ER exposure during their orientation or training that felt unprepared or somewhat prepared in the 51 clinical skills over 50% of the time. Four of these five participants had previous experience as an APP prior to their current rural position. Overall, participants' experience as an RN in the ER, exposure to the ER during their orientation or training, years of experience as an APP, or amount of emergency care specific education completed did not appear to consistently influence participants' perceived level of preparedness in completing procedural skills.

Type of emergency care specific education included in participants' orientation and training was identified in the needs assessment. The top five types of emergency care specific education participants reported were included in their orientation and training were ACLS, ATLS, BLS, PALS, and CALS. This finding supports the idea that these types of emergency care specific education are often the only class certifications completed on a regular basis, likely

because they are the minimum requirements needed to work in a rural ER. To maintain these certifications, refresher courses are required every two years for BLS, ACLS, and PALS and every four years for ATLS and CALS (AHA, 2014a; AHA 2014b; AHA, 2018; ACS, 2018; CALS, 2019). Furthermore, the courses ATLS, PALS, ACLS, ATLS, and CALS offer education on only 25 of the 60 ENA emergency care competencies for NPs (Appendix A) (ENA, 2008). There was not an option within the question to select “no education”. In the future, including this option could identify if participants who did not answer the question did not respond because they did not receive any emergency care specific education in their orientation or training.

Needs assessment participants were asked to leave a comment suggesting any changes to their orientation or training that they felt would have improved their preparedness to practice. Topic themes identified in the comments included education, orientation, and residency; further justifying the need for increased initial training and continuing education. Participants’ suggested changes are displayed in Table 6.

Table 6

Suggested Changes to Orientation or Training for Rural Care

Responses
I would really have a new person shadow in a large facility like Sanford where I learned everything
A critical access clinic rotation should be required
Develop an elective emergency care/critical care course for FNP’s during their graduate program
Greater availability of preceptors prior to independent practice in rural setting
Longer orientation time, more training in the computerized documentation, more CMEs offered, partnership with a family practice physician included in orientation
Increase length of orientation, have a mentor available, able to consult easily with questions or to review patients after being seen
Orientation with on-site provider
Include cultural competency during orientation due to the increasing number of patients from different cultural background in order to provide care in line with unique needs.
Make the DNP a residency type program with more clinic training hours
Consistent clinicals, more uniform education for NPs. I think residency should be a necessity. There should be more focus on the disease process and medical management, less focus on the fluff

In response to the Rural Nurse Practitioner Skill Needs Assessment data that identified a need for further education due to a lack of preparedness in numerous clinical skills, the Rural Emergency Skills Seminar was developed as the second part of this project to address these findings.

Rural Emergency Skills Seminar

The original project design intended for the Rural Emergency Skills Seminar to have rural ND NP preceptors as participants. However, due to the low number of NP participants by the registration deadline, NDSU DNP students were invited to participate in the seminar. Overall, the results of the posttest revealed the seminar to be an effective educational experience.

All 11 participants strongly agreed that they would recommend the seminar to colleagues and felt the educational seminar would have been beneficial as an NP student. 10 participants reported the content level of the seminar as appropriate for nurse practitioners. All the participants strongly agreed that hands-on skills application was conducive to their learning, 10 participants strongly agreed that tabletop discussion was conducive to their learning, and nine participants strongly agreed that PowerPoint lecture was conducive to their learning. It would appear, in this sample, that utilizing a combination of hands-on skills application, tabletop discussion, and PowerPoint lectures for the educational experience was conducive to the participants' learning and could be recommended as a future training format.

After completion of the seminar, participants reported feeling better prepared to implement the emergency skills covered in the seminar (Figures 6, Figure 7, & Figure 8). The seminar increased participants' perceived comfort levels and level of competency in implementing the seminar's emergency skills: cervical spine management, procedural sedation and airway management, and imminent childbirth and post-delivery care. All 11 participants

either strongly agreed or somewhat agreed that they felt more comfortable and competent in implementing the emergency care skills after completion of the seminar, supporting the need for increased education and training to support rural NPs in the ER.

All participants found the seminar to increase their perceived competency in implementing the emergency care skills regardless of their years of experience. One participant had over nine years of experience in their current rural position and over nine years of experience in a previous rural position. Two participants had over nine years of experience in their current rural position. Eight of the participants did not respond to questions regarding years of experience. This could be due to DNP students participating in the seminar. It cannot be certainly stated, based upon posttest results, that more years of experience correlated with a perceived higher level of preparedness in implementing the emergency skills as the eight participants that did not respond to questions regarding years of experience felt just as prepared as participants who identified years of experience.

Responses to question eight from the seminar posttest, “On average, how often do you complete the following skills in the emergency department?” revealed that many of the participants did not regularly complete the emergency skills taught in the seminar. Of the 11 participants, two reported completing cervical spine management more than once a month, and three reported completing procedural sedation and airway management more than once a month. Only one participant reported completing the skill, imminent childbirth and post-delivery care, less than once a year, nine participants reported they had never completed this skill before, and one participant did not respond to the question. A correlation was not found between years of experience or prior experience and frequency of skill completion. These results could potentially be related to low patient volumes, frequency of ER coverage, or a combination of both.

Two participants reported working in a rural ER weekly and three participants reported working in a rural ER less than annually. Four of these participants saw 0-2 patients per 8-hour ER shift. One participant did not identify how many patients they saw in the ER per 8-hour shift. Although a numeric trend was not found between frequency of working in a rural ER and frequency of completing the procedural skill, an assumption can be made that increasing exposure to the ER setting would likely increase the frequency of completing the skill. The participants that reported completing a procedural skill more than once a month did not report working in a rural ER. Posttest results did not provide a clear explanation; however, possibilities could include that the participants worked in an urban ER setting, participants worked in a different setting, or that the participants were DNP students who had completed the skill during their clinical rotations. In conclusion, these findings support the idea that rural NPs may have difficulty maintaining their procedural skills because they do not have the opportunity to implement the procedural skills regularly due to low patient volumes or infrequent ER coverage. These findings further support the need for more exposure and regular emergency care education.

Limitations

Throughout the practice improvement project, limitations were revealed. Only three rural ND NP preceptors attended the Rural Emergency Skills Seminar, and due to the low number of NPs, NDSU DNP students were invited to attend the seminar. This created an obstacle in the ability to compare the heterogeneous participant samples from the needs assessment (rural ND NP preceptors only) to the seminar posttest (rural ND NP preceptors and NDSU DNP students), limiting evaluation of objective three. In addition, the seminar posttest was tailored to rural NPs and some of the posttest questions did not pertain to current DNP students. This likely caused the

students to not answer some of the questions, potentially affecting seminar posttest statistics as 8 out of the 11 Rural Emergency Skill Seminar participants (72.73%) were NDSU DNP students. The small number of responses and participants provided limitations to the generalizability of this project for rural NP emergency skills competency throughout the state of ND.

Although utilizing the existing Rural Nurse Practitioner Skills Needs Assessment and its data was an overall advantage, it also came with limitations. A limitation of the needs assessment was that it was developed by researchers for a purpose separate from this project. If a needs assessment had been created explicitly for this practice improvement project, questions more specific to the project and its objectives could have been developed. For example, similar pre-seminar and post-seminar surveys could have been developed to allow for better comparison and evaluation of knowledge gained.

An additional limitation of the needs assessment was the lack of complete responses, as evidenced by 18 responses collected and 14 responses completed (see Table 4 and Figure 4). Of the 14 participants that completed the survey, many did not identify if they felt the clinical skills in question 11 were within their scope of practice. Question seven within the Rural Emergency Skills Seminar Posttest was created to be very similar to question 11 in order to allow for comparison. Fourteen responses were collected from the needs assessment and 11 responses were collected from the posttest, and the average response total identifying if the skill was within participants' scope of practice was five for both surveys. Regardless that DNP students participated in the Rural Emergency Skills Seminar and completed the posttest, scope of practice questions were still skewed. It is unclear whether participants did not answer this portion of the questions because they were uncertain if the skill was within their scope of practice, if they

misunderstood the question, or did not realize there was an additional portion of the question to answer.

Recommendations

The positive results from the Rural Emergency Skills Seminar evaluation indicate that educational opportunities with didactic and hands-on application enhances NP knowledge and skill of emergency department skills/procedures. Any NP currently working or planning to work in a rural area should seek out education related to rural ER care at least annually, whether that be through curriculum, continuing education, or certification. Given the wide variety of orientation and past experiences of NPs, some continuing education may need to be driven by the NP instead of the institution. The certifications of BLS, ACLS, PALS, CALS and ATLS, while very important, only require recertification every two to four years (AHA, 2014a; AHA 2014b; AHA, 2018; ACS, 2018; CALS, 2019). Attending education developed specifically for the rural ER setting or specifically regarding acute, critical, or emergent disease management that is structured with a wide variety of learning opportunities is recommended to best support the rural ER provider. These learning opportunities could include, but are not limited to, ultrasound courses, Emergency Boot Camp courses, or Fundamental Critical Care Courses. The author recommends that the Rural Emergency Skills Seminar be repeated in order to reach more rural NPs. Developing the seminar to include education on other clinical skills, such as those identified in the Rural Nurse Practitioner Skill Needs Assessment data, would further educate rural NPs in emergency care as well.

To support NP students planning to work in a rural area, the author recommends that FNP programs implement a similar program into their curriculum as an elective class. Due to variances in educational competencies from an acute care nurse practitioner to an FNP, some

FNP programs have developed and implemented urgent and emergent care education into their programs (Evans et al., 2015; Hoyt & Proehl, 2015). Therefore, the author recommends that more FNP programs implement didactic and clinical content covering urgent and emergent care into their curricula, including DNP/FNP programs within the state of ND. Providing the education within ND DNP/FNP curriculums would further support future NP graduates to provide care in rural ND, a state where numerous HPSAs exist and where the presence of CAH ERs are imperative for healthcare access. Incentives such as HRSA funding or other financial incentives could be considered as provisions for ND DNP/FNP programs that provide similar education as elective courses within their curriculum.

Implications for Practice & Future Research

In a rural setting, the healthcare provider commonly assumes the role as a PCP in the clinic and as a hospitalist and ER provider in the CAH (Stock, 2015). Effective and comprehensive emergency care training is particularly important in a CAH, as the provider may be the sole provider on-call when a critical patient presents to the ER. Increased initial emergency care education and continued sustainment of rural providers' emergency skills is essential to the future of rural healthcare and patient safety. This practice improvement project served to highlight knowledge gaps in emergency care competencies and develop an emergency care skills educational seminar. Based upon the data collected, participants of the Rural Emergency Skills Seminar felt better prepared in the procedural skills covered to care for patients in the rural ER setting. In addition, the project served to add more data to the limited existing literature on rural NPs' emergency care competencies and served as a pilot study for the development of a future FNP emergency skills curriculum.

Given the amount of time and cost of continuing education, future research assessing institutional support for continuing education should be completed. The development and implementation of policies that provide support to rural NPs expected to work in the ER would encourage the rural NP to seek out more educational opportunities. Institutional support may include additional time allotment and reimbursement specifically for completing ER education.

There is minimal information that has been published concerning training and validation of FNPs' skills and competencies who work in the ER (Wolf et al., 2017). NPs have the opportunity to utilize their past experiences as an RN to help shape their NP practice, including their skills and competencies. While there is varying scope of practice perceptions by NPs and regulations nationwide, patients remain satisfied with the care they are provided by NPs (Marsh et al., 2012). NPs who answer the need for providers in rural areas and give their time to CAHs are ensuring many rural citizens get both the primary and emergency care they need. The project identified emergency care training and perceived levels of preparedness for rural ND NP preceptors. It would be beneficial for future research to be completed to further identify and delineate emergency care training and validation of competencies to include all NPs working in rural ND ERs and could further expand to rural ER NPs in other states.

An additional recommendation for future research would be to modify the Rural Nurse Practitioner Skill Needs Assessment and the Rural Emergency Skills Seminar Posttest to clarify and secure more clear and comprehensive responses. Modifications should be made to the needs assessment so that participants must complete each question in its entirety before submitting. For question 11 in the needs assessment and question seven in the posttest, the areas identifying if the clinical skill is within the NP's scope of practice should be modified. Due to lack of responses and wide variation in responses, it is recommended that an option to select "I don't

know” be provided. Providing this option could clarify whether participants forgot to respond to this portion of the question or were unsure if the skill was within their scope of practice. Future research specifically identifying rural ER NPs’ perceptions on scope of practice in emergency care skills should be completed. Further research would help clearly identify if rural ER NP’s understand their scope of practice in emergency care skills. Furthermore, factors affecting participants’ perceived level of competency should be researched as perceptions of competency could be influenced by participants’ confidence, personality traits, attitude, self-efficacy, or motivation.

In the future, there would be value added for FNPs in other areas, such as other universities or rural healthcare facilities, to implement Rural Emergency Skills Seminars. Implementing seminars in other geographical areas would possibly better prepare NPs for rural emergency care as well as improve patient care. Developing the seminar to include education on other clinical skills, such as those identified in the Rural Nurse Practitioner Skill Needs Assessment data or the ENA NP emergency care competencies, would further educate rural NPs in emergency care. As a result of this project, a suggested sample curriculum for a 12-week elective emergency care course has been provided, based upon the ENA competencies, and is displayed in Appendix I. Suggested changes to orientation and training collected from the Rural Nurse Practitioner Skill Needs Assessment identified themes including education, orientation, and residency. These suggestions should be considered when further developing the seminar and by CAH’s when hiring providers to work in their ER (Table 6). Needs assessment participants were asked to leave a comment suggesting any changes to their orientation or training that they felt would have improved their preparedness to practice. Further research could be completed to assess if the participants’ perceived level of preparedness is retained at six months and one year

from participating in the Rural Emergency Skills Seminar. Replicating the seminar with other clinical skills or in other areas and further assessing participants' perceived level of preparedness would increase the amount of data and existing literature and allow for researchers to make better generalizations as well as provide increased validity and reliability to the project.

Dissemination

Dissemination of the project occurred in multiple settings. When the project was in its pre-implementation stage, it was disseminated through a poster presentation as a part of NDSU SON's Poster Presentations. NDSU SON's poster presentation consists of a 90-minute session where NDSU nursing students present group projects and DNP students present their practice improvement projects through poster presentations. After analysis of the needs assessment and prior to implementation of the seminar, the project was disseminated through a poster presentation at the North Dakota Nurse Practitioners' Association Annual Pharmacology Conference. In addition, the investigator and co-investigator developed the procedural sedation and airway management hands-on scenario with the assistance of SIM-ND for the Rural Emergency Skills Seminar. SIM-ND plans to publish the scenario and continue to utilize it for future educational experiences.

Application to Nurse Practitioner Role

NPs continue to play a crucial role in decreasing HPSAs by providing care to rural patients that would otherwise go untreated in many circumstances. It is evident from the Rural Nurse Practitioner Skills Needs Assessment data that NPs may not be initially fully prepared to provide care in the rural ER setting, a setting where rural providers are often required to practice. A newly graduated DNP has met the educational and DNP Essential requirements deemed vital to practice as a competent NP, however more thorough ER education and initial on-the-job

orientation/training are needed to support the NP working in a rural ER. Results from the Rural Emergency Skills Seminar posttest revealed an increase in perceived level of preparedness after completing the seminar. Although generalizations cannot be made with certainty due to the limited number of NPs that participated in the seminar, NPs need to support rural healthcare by continually evaluating their profession's emergency skills competencies. Furthermore, identifying ER providers' educational needs must be stressed as the training and education of these persons is expected to greatly improve overall health systems (Wolf et al., 2017).

REFERENCES

- Agency for Healthcare Research and Quality. (2012). Primary care workforce facts and stats No. 3. Retrieved from <https://www.ahrq.gov/sites/default/files/publications/files/pcwork3.pdf>
- American Academy of Nurse Practitioners National Certification Board. (2018). AANPCB emergency nurse practitioner specialty certification ENP certification handbook. Retrieved from <https://www.aanpcert.org/resource/documents/Emergency%20NP%20Handbook.pdf>
- American College of Surgeons. (2018). Advanced trauma life support. Retrieved from <https://www.facs.org/quality-programs/trauma/atls/faq>
- American Heart Association. (2014a). Basic life support. Retrieved from <http://international.heart.org/en/our-courses/basic-life-support>
- American Heart Association. (2014b). ACLS provider course. Retrieved from <http://international.heart.org/en/our-courses/acls-provider-course>
- American Heart Association. (2018). Pediatric advanced life support (PALS). Retrieved from http://cpr.heart.org/AHA/ECC/CPRAndECC/Training/HealthcareProfessional/Pediatric/UCM_476258_PALS.jsp
- Bae, S. (2016). Nurse practitioners' job satisfaction in rural versus nonrural areas. *Journal of the American Association of Nurse Practitioners*, 28(9), 471-478. doi: 10.1002/2327-6924.12362
- Baernholdt, M., Keim-Malpass, J., Hinton, I. D., Guofen, Y., & Bratt, M. (2014). A comparison of quality of care in critical access hospitals and other rural hospitals. *Online Journal of Rural Nursing & Health Care*, 14(2), 3-31. doi:10.14574/ojrnhc.v14i2.328

- Baker, E., Schmitz, D., Wasden, S., MacKenzie, L., & Morris, B. (2011). *Assessing critical access hospital (CAH) assets and capabilities for recruiting and retaining physicians: The North Dakota CAH community apgar program*. Retrieved from <https://ruralhealth.und.edu/projects/community-apgar-project/pdf/nd-cap-technical-report.pdf>
- Balanced budget act of 1997. (1997) (enacted). Retrieved from <https://www.gpo.gov/fdsys/pkg/BILLS-105hr2015enr/pdf/BILLS-105hr2015enr.pdf>
- Barnacle, M., & Gross, D. (2018). *Rural nurse practitioner skill needs assessment*. Unpublished, School of Nursing DNP/FNP program, North Dakota State University, Fargo, ND.
- Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Melno Park, CA: Addison-Wesley.
- Buckwalter, K.C., Cullen, L., Hanrahan, K., Kleiber, C., McCarthy, A.M., Rakel, B., Steelman, V., Tripp-Reimer, T., & Tucker, S. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing*, 14(5), 425.
- Carter, K.W., Cassidy, K., & Bhimani, M. (2012). Barriers to patient care in southwestern Ontario rural emergency departments: Physician perceptions. *Canadian Journal of Rural Medicine*, 17(3), 87-91.
- Center for Rural Health: The University of North Dakota School of Medicine & Health Sciences. (2012a). CAH financial conditions and concerns. Retrieved from https://ruralhealth.und.edu/pdf/cah_financial_2012.pdf
- Center for Rural Health: The University of North Dakota School of Medicine & Health Sciences. (2012b). North Dakota CAH administrators' attitudes toward issues facing rural hospitals. Retrieved from https://ruralhealth.und.edu/pdf/attitudes_2012.pdf

Center for Rural Health: The University of North Dakota School of Medicine & Health Sciences. (2018). North Dakota health professional shortage areas. Retrieved from <https://ruralhealth.und.edu/maps/nd-hpsa.pdf>

Comprehensive Advanced Life Support (2019). About comprehensive advanced life support. Retrieved from <https://www.calsprogram.org/about/>

Doody, C. M., & Doody, O. (2011). Introducing evidence into nursing practice: Using the IOWA model. *British Journal of Nursing*, 20(11), 661-664.

Emergency Nurses Association. (2008). *Competencies for nurse practitioners in emergency care*. Des Plaines, IL: Author. Retrieved from http://aaenp-natl.org/images/downloads/Practice/compsfornpnsinemergencycarefinal_ena.pdf

Evans, D., Hoyt, S., Wilbeck, J., Campo, T., & Ramirez, E. (2015). Regulation of emergency nurse practitioners based on education and certification. Retrieved from http://aaenp-natl.org/images/AAENP_ENPeducation_regulation_paper.pdf

Gibbens, B. (2017). North Dakota's significant health needs as identified by community health needs assessments. Retrieved from <https://ruralhealth.und.edu/projects/community-health-needs-assessment/pdf/1213-north-dakota-significant-health-needs-fact-sheet.pdf>

Hart, A. M. & Bowen, A. (2016). New nurse practitioners' perceptions of preparedness for and transition into practice. *The Journal for Nurse Practitioners*, 12(8).

Health Resources & Services Administration (October 2017). Designated health professional shortage areas statistics. Retrieved from https://ersrs.hrsa.gov/ReportServer?/HGDW_Reports/BCD_HPSA/BCD_HPSA_SCR50_Qtr_Smry_HTML&rc:Toolbar=false

Health Resources & Services Administration (n.d.). Shortage areas. Retrieved from <https://datawarehouse.hrsa.gov/topics/shortageAreas.aspx>

- Hoyt, S.K., Coyne, E. A., Ramirez, E.G., Smith-Peard, A., Gisness, C., & Gacki-Smith, J. (2010). Nurse practitioner delphi study: Competencies for practice in emergency care. *Journal of Emergency Medicine, 36*(5), 439-449. doi: 10.1016/j.jen.2010.05.001
- Hoyt, S.K. & Proehl, J.A. (2015). Family nurse practitioner or acute care nurse practitioner in the emergency department? *Advanced Emergency Nursing Journal, 37*(4), 243-246. doi: 10.1097/TME.0000000000000084
- Institute of Medicine (2010). *The future of nursing leading change, advancing health report recommendations*. Retrieved from <http://floridasnursing.gov/forms/iom-future-nursing-info.pdf>
- Jansson, M., Kaariainen, M., & Kyngas, H. (2013). Effectiveness of simulation-based education in critical care nurses' continuing education: A systematic review. *Clinical Simulation in Nursing, 9*(9). doi:10.1016/j.ecns.2012.07.003
- Keough, V.A., Stevenson, A., Martinovich, Z., Young, R., & Tanabe, P. (2011). Nurse practitioner certification and practice settings: Implications for education and practice. *Journal of Nursing Scholarship, 43*(2). doi: 10.1111/j.1547-5069.2011.01395.x
- Laustsen, G. (2013). What do nurse practitioners do? Analysis of a skills survey of nurse practitioners. *Journal of the American Association of Nurse Practitioners, 25*(1), 32-41. doi:10.1111/j.1745-7599.2012.00750.x
- Marsh, L., Diers, D., & Jenkins, A. (2012). A modest proposal: Nurse practitioners to improve clinical quality and financial viability in critical access hospitals. *Policy, Politics, & Nursing Practice, 12*(4).
- Merriel, A., van der Nelson, H.A., Lengueerand, E., Chung, Y., Soar, J., Ficquet, J., . . . & Siassakos, D. (2016). Emergency training for in-hospital-based healthcare providers:

- Effects on clinical practice and patient outcomes. *Cochrane Database of Systematic Reviews*. doi: 10.1002/14651858.CD012177.
- Mason, S., Fletcher, A., McCormick, S., Perrin, J., & Rigby, A. (2005). Developing assessment of emergency nurse practitioner competence – a pilot study. *Journal of Advanced Nursing*, 50(4), 425-432. doi:
- Nelson, S.C. & Hooker, R. S. (2016). Physician assistants and nurse practitioners in rural Washington emergency departments. *Journal of Physician Assistant Education*, 27(2), 56-62. doi: 10.1097/JPA.0000000000000074
- Newkirk, V. & Damico, A. (2014). The affordable care act and insurance coverage in rural areas. Retrieved from <https://www.kff.org/uninsured/issue-brief/the-affordable-care-act-and-insurance-coverage-in-rural-areas/>
- North Dakota Board of Nursing. (2018). Current statistics. Retrieved from <https://www.ndbon.org/>
- North Dakota Nurse Practitioner Association. (2016). APRNS in ND.
- North Dakota State University College of Health Professions. (2017). Graduate nursing handbook 2017-2019. Retrieved from https://www.ndsu.edu/fileadmin/nursing/documents/handbooks/2017_-_2019_Final_Graduate_Handbook.pdf
- Olson, C. (2015). *Emergency care education for advanced practice providers in rural critical access hospitals*. (Doctoral dissertation, North Dakota State University). Retrieved from <https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/1683996273?pq-origsite=primo>

- Ro, K., Weiland, C., & Sin, M.K. (2018). An interprofessional web-based teaching module to enhance competency of the advanced practice nursing clinical education in the emergency department. *Advanced Emergency Nursing Journal*, 40(2). doi: 10.1097/TME.0000000000000185
- Robert Wood Johnson Foundation. (2016). Successes in advancing health and health care through nursing. Retrieved from <https://campaignforaction.org/wp-content/uploads/2016/03/Campaign-Successes-3.30.16.pdf>
- Rogers, F.B. & Rittenhouse, K. (2015). The golden hour in trauma: dogma or medical folklore? *The Journal of Lancaster General Hospital*, 9(1). Retrieved from http://jlggh.org/JLGH/media/Journal-LGH-Media-Library/Past%20Issues/Volume%209%20-%20Issue%201/Rogers9_1.pdf
- Rural Health Information Hub. (2017). Rural health disparities. Retrieved from <https://www.ruralhealthinfo.org/topics/rural-health-disparities>
- Ryan, M. (2016). Health professional shortage areas and scoring. Retrieved from <https://nhsc.hrsa.gov/corpsexperience/aboutus/nationaladvisorycouncil/meetingsummarie s/03-17-shortage-designation.pdf>
- Stock, N. (2015). *A transition-to-practice residency that supports the nurse practitioner in a critical access hospital*. (Doctoral dissertation, Walden University). Retrieved from <https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/1668079941>
- University of North Dakota. (2018a). About SIM-ND. Retrieved from <https://med.und.edu/sim-nd/about.html>
- University of North Dakota. (2018b). SIM-ND. Retrieved from <https://med.und.edu/sim-nd/>

- University of North Dakota. (2019). SIM-ND benefits. Retrieved from <https://med.und.edu/sim-nd/benefits.html>
- University of North Dakota School of Medicine and Health Sciences Advisory Council. (2017). Fourth biennial report health issues for the state of North Dakota. Retrieved from http://med.und.edu/biennial-report/_files/docs/fourth-biennial-report.pdf
- United States Census Bureau (2016). New census data show differences between urban and rural populations. Retrieved from <https://www.census.gov/newsroom/press-releases/2016/cb16-210.html>
- United States Census Bureau (2017). Rural America. Retrieved from <https://storymaps.geo.census.gov/arcgis/apps/MapSeries/index.html?appid=9e459da9327b4c7e9a1248cb65ad942a>
- University of Texas Arlington (2018). What is the difference between acute care and primary care nurse practitioners. Retrieved from <https://academicpartnerships.uta.edu/articles/healthcare/difference-acute-primary-np.aspx>
- Wiltse, K.L. & Fairman, J. (2015). Postgraduate nurse practitioner residency programs: Supporting transition to practice. *Academic Medicine*, 90(6). doi: 10.1097/ACM.0000000000000567
- Wolf, L.A., Delao, A.M., Perhats, C., Moon, M.D., & Carman, M.J. (2017). The experience of advanced practice nurses in US emergency care settings. *Journal of Emergency Nursing*, 43(5).

APPENDIX A. COMPETENCIES FOR NPS IN EMERGENCY CARE

Competencies

The following competencies include knowledge, behaviors, and skills an entry-level nurse practitioner should have in order to practice in emergency care. These competencies are intended to supplement the core competencies for all nurse practitioners as well as population-focused nurse practitioner competencies while providing a model for entry-level practice in emergency care. Nurse practitioner practice may differ from that described in these entry-level competencies due to variations in state regulation, practice setting, employment arrangement, and as a result of increasing knowledge and experience.

I. Management of Patient Health/Illness Status

1. Triage patients' health needs/problems.
2. Completes EMTALA-specified medical screening examination.
3. Responds to the rapidly changing physiological status of emergency care patients.
4. Uses current evidence-based knowledge and skills in emergency care for the assessment, treatment, and disposition of acute and chronically ill and injured (e.g., physiologic, psychological, socio-economic, cultural) emergency patients.
5. Specifically assesses and initiates appropriate interventions for violence, neglect, and abuse (e.g., physical, psychological, sexual, substance).
6. Specifically assesses and initiates appropriate interventions and disposition for suicide risk.
7. Assesses patient and family for levels of comfort (e.g., pain, palliative care, end of life, bad news) and initiates appropriate interventions.
8. Recognizes, collects, and preserves evidence as indicated (e.g., forensic evidence).
9. Orders and interprets diagnostic tests.
10. Orders pharmacologic and non-pharmacologic therapies.
11. Orders and interprets electrocardiograms.
12. Orders and interprets radiographs.
13. Assesses response to therapeutic interventions.
14. Documents assessment, treatment, and disposition.

II. Professional Role

15. Functions as a direct provider of emergency care services.
16. Directs and clinically supervises the work of nurses and other healthcare providers.
17. Participates in internal and external emergencies, disasters, and pandemics.
18. Maintains awareness of known causes of mass casualty incidents and the treatment modalities required for emergency care.
19. Acts in accordance with legal and ethical professional responsibilities (e.g., patient management, documentation, advance directives).

III. Airway, Breathing, Circulation, and Disability Procedures

20. Assesses and manages a patient in cardiopulmonary arrest (e.g., neonatal resuscitation, leads code team, rapid response team).
21. Assesses and manages airway (e.g., endotracheal intubation, ventilated patients).
22. Assesses and obtains advanced circulatory access (e.g., intraosseous).

23. Assesses and manages patients with disability (e.g., neurologic).
24. Assesses and manages procedural sedation patients.

IV. Skin and Wound Care Procedures

25. Performs ultraviolet examination of skin and secretions (e.g., Woods Lamp).
26. Treats skin lesions (e.g., foot callus, skin tag, plantar lesion, decubitus care).
27. Injects local anesthetics.
28. Performs nail trephination.
29. Removes toenail(s) (e.g., partial or complete removal of an ingrown toenail).
30. Performs a nail bed closure.
31. Performs closures (such as a single layer, multiple, staple, adhesive).
32. Revises a wound for closure.
33. Debrides minor burns (e.g., nonadhering blister).
34. Incises, drains, irrigates, and packs wounds.

V. Head, Eye, Ear, Nose, and Throat Procedures

35. Dilates eye(s).
36. Performs fluorescein staining.
37. Performs tonometry to assess intraocular pressure.
38. Performs Slit lamp examination.
39. Performs cerumen impaction curettage.
40. Controls epistaxis.

VI. Chest and Abdomen

41. Performs a needle thoracostomy for life-threatening conditions in emergency situations (e.g., tension pneumothorax).
42. Replaces a gastrostomy tube.

VII. Neck, Back, and Spine Procedures

43. Clinically assesses and manages cervical spine.
44. Performs lumbar puncture.

VIII. Gynecologic, Genitourinary, and Rectal Procedures

45. Incises and drains a Bartholin's cyst.
46. Assists with imminent childbirth and post-delivery maternal care.
47. Removes fecal impactions.
48. Incises thrombosed hemorrhoids.
49. Performs sexual assault examination.

IX. Extremity Procedures

50. Performs digital nerve block.
51. Reduces fractures of small bones (e.g., fingers, toes).
52. Reduces fractures of large bones with vascular compromise (e.g., traction splint).
53. Reduces dislocations of large and small bones.
54. Applies immobilization devices (e.g., splint, traction).
55. Bivalves/ remove casts.

56. Performs arthrocentesis (e.g., knee, elbow).

57. Measures compartment pressure.

X. Other

58. Performs radio communication with prehospital units.

59. Interprets patient diagnostics (e.g., vital signs, 12-lead ECGs) as communicated by prehospital personnel.

60. Removes foreign bodies (e.g., from orifices and soft tissue).

Competencies for Nurse Practitioners in Emergency Care

©Emergency Nurses Association, 2008

APPENDIX B. RURAL NURSE PRACTITIONER SKILL NEEDS ASSESSMENT

NDSU North Dakota State University

School of Nursing DNP/FNP Program

PO Box 6050

Fargo, ND 58108-6050

701.231.7395

Rural Nurse Practitioner Skill Needs Assessment

1. How many years did you spend as a practicing RN in each of the following settings? (if none, please enter zeroes; if less than a year, please report the fractions.)
 - _____ Critical care
 - _____ Emergency department
 - _____ Home health care
 - _____ Inpatient medical/surgical unit
 - _____ Inpatient pediatrics
 - _____ Inpatient maternity
 - _____ Other inpatient clinic
 - _____ Outpatient clinic
 - _____ Public health
 - _____ Residential facility
 - _____ School/college clinic
 - _____ School/college teaching
 - _____ Other (please specify) _____
2. How long have you been employed in your current position?
 - Less than a year
 - 1-2 years
 - 3-5 years
 - 6-9 years
 - Over 9 years
3. Did you have previous experience as an advanced practice provider (APP) in a rural setting?
 - Yes
 - No
4. If you answered yes to the previous question, how many years of experience in rural care did you have prior to your current position?
 - Less than a year
 - 1-2 years

- 3-5 years
 - 6-9 years
 - Over 9 years
5. Did you have previous experience as an APP in settings *other* than rural care?
- Yes
 - No
6. If you had previous experience as an APP in settings *other* than rural care, how many years did you spend in each of the following settings? (if none, please enter zeroes: if less than a year, please report the fractions.)
- _____ Adult health/internal medicine clinic
 - _____ Family practice or primary care
 - _____ Hospital medicine
 - _____ Intensive care or critical care
 - _____ Long term care
 - _____ Pediatric clinic
 - _____ Public or community health
 - _____ School or college health
 - _____ Urgent care or walk-in clinic
 - _____ Women's health
 - _____ Emergency care
 - _____ Other specialty care area(s), please list
-
-
7. What is the model of care within your clinical setting?
- The sole provider with the second individual on call
 - Additional provider(s) during busier times of the day/week
 - Always at least two providers during operational hours

The following questions pertain to education provided after beginning your current position in rural care.

8. In your current position, how long was your orientation or training?
- None
 - 1-40 hours
 - 40-80 hours
 - 3-4 weeks
 - 5-6 weeks
 - 7-8 weeks
 - 2-3 months
 - 3-4 months
 - Over four months
9. What areas were included in your orientation? (check all that apply)
- Family practice or other outpatient clinic
 - Long term care

- Inpatient care
- Urgent care or walk-in clinic
- Emergency care
- Other (please specify)_____

10. If part of your job responsibilities include covering an emergency department, what ***emergency care specific education*** was included in your orientation or training? (check all that apply)

- Certifications
 - BLS—Basic Life Support
 - ACLS—Advanced Cardiac Life Support
 - CALS—Comprehensive Advanced Life Support
 - ATLS—Advanced Trauma Life Support
 - PALS—Pediatric Advanced Life Support or other pediatric life support course
 - TNCC—Trauma Nurses Core Course
 - Classroom or class meetings
 - Internet instruction or modules
 - Videos or other audiovisual modality
 - Shadowing with another APP
 - Shadowing with a physician
 - Assigned a preceptor
 - Mentoring
 - Telemedicine instruction
 - Simulation
 - Ultrasound course
 - Airway course
 - Regional conference (please specify)
-
- National conference (please specify)
-
- Other (please specify)
-

11. Considering your experiences from your educational program, previous work experiences, and your orientation or training in your current position, how prepared were you for actual practice in the following clinical areas?

Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	Skill within your scope of practice? Y/N	Clinical area
					EMTALA –specified medical screening exam
					Rapidly changing the physiologic status of a patient
					Sexual assault exam and preserves evidence
					Laboratory diagnostics— ordering and interpreting
					Pharmacologic and non-pharmacologic therapies
					Electrocardiograms interpretation
					Radiograph interpretation
					CT scans and MRI interpretation
					Manages <i>adult</i> patient in cardiopulmonary arrest
					Manages <i>pediatric</i> patient in cardiopulmonary arrest
					Emergency airways (e.g. King, Combitube, LMA)
					Endotracheal intubation
					CPAP/BIPAP
					Intraosseous access
					Central venous access
					Procedural sedation
					Ultraviolet examination of skin and secretions
					Skin lesions treatment (e.g. ulcers, foot callus, skin tag)
					Lesion excision: Punch biopsy

					Injects local anesthetics
					Nail trephination/removal
					Nail bed closure
					Single layer laceration repair
					Complex or deep wound closure
					Minor burn debridement
					Abscess incision, drainage, and wound packing
					Pupil dilation
					Fluorescein staining
					Slit lamp examination
					Cerumen impaction curettage
					Epistaxis control
					Nasogastric or orogastric tube placement
					Cervical spine management
					Bartholin's cyst incision and drainage
					Lumbar puncture
					Imminent childbirth and post-delivery maternal care
					Fecal impaction removal
					Incise thrombosed hemorrhoids
					Digital nerve block
					Fracture reduction
					Dislocation reduction
					Immobilization devices—splints or casts

					Bivalves/removes casts
					Arthrocentesis (knee or elbow)
					Compartment pressure measurement
					Foreign body removal (e.g. eyes, ears, nose, rectum, vaginal)
					Disaster and mass casualty incidents
					Palliative care and end-of-life care
					Acute neurologic disability
					Mental health emergency

12. Did you prepare for your current position in other ways that were not provided by your place of employment?

- Yes (please describe)

- No

13. Can you suggest any changes to your orientation or training for rural care that would have improved your preparedness to practice?

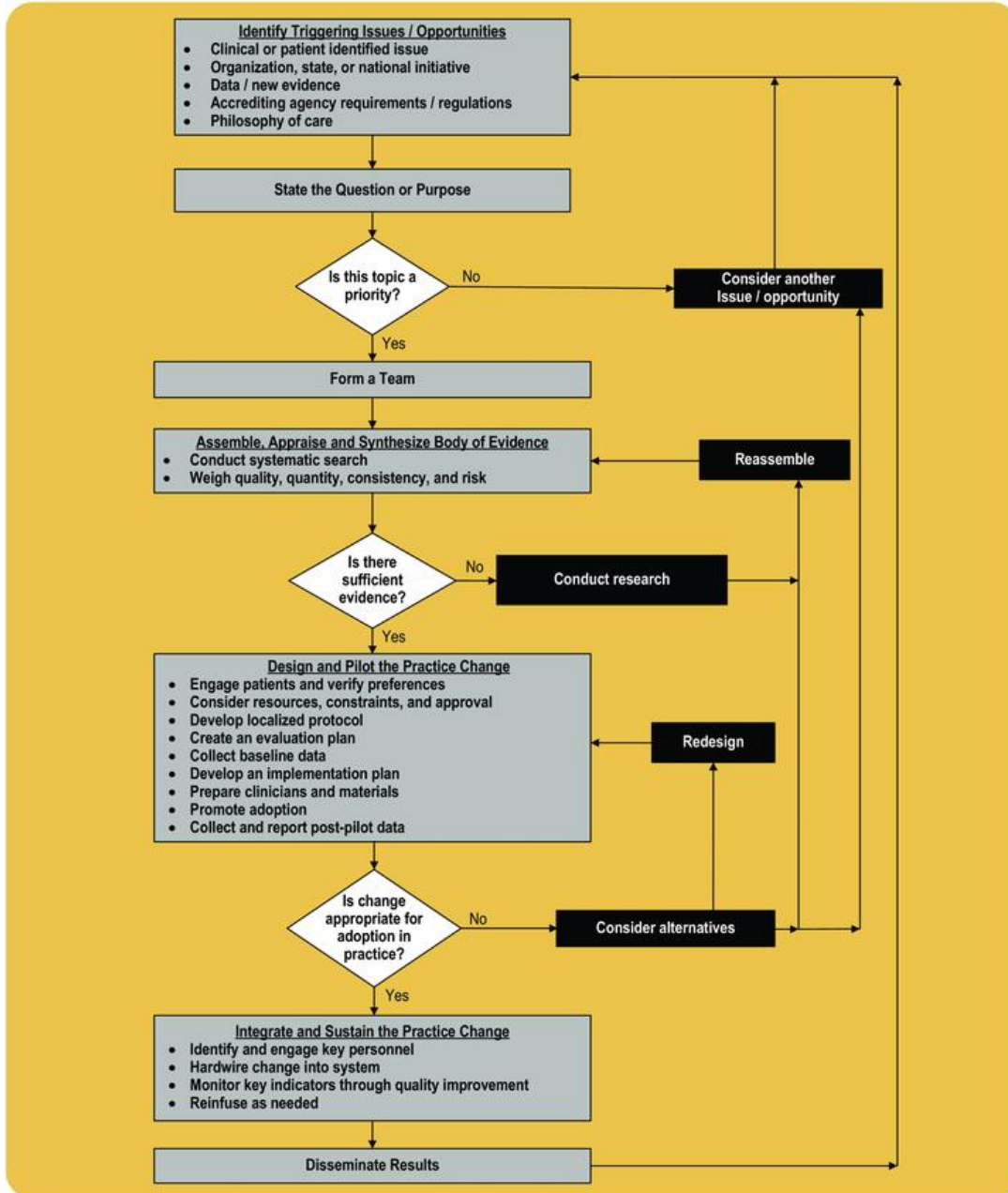
14. List the top 3 procedures or skills for which you would like to get additional training:

- a.
- b.
- c.

15. Do you have further comments?

APPENDIX C. THE IOWA MODEL REVISED: EVIDENCE-BASED PRACTICE TO PROMOTE EXCELLENCE IN HEALTH CARE

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care



◆ = a decision point
 ©University of Iowa Hospitals and Clinics, Revised June 2015
 To request permission to use or reproduce, go to <http://www.uihealthcare.org/nursing-research-and-evidence-based-practice/>
 DO NOT REPRODUCE WITHOUT PERMISSION

APPENDIX D. UNIVERSITY OF IOWA HOSPITALS AND CLINICS PERMISSION

LETTER

Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

Kimberly Jordan - University of Iowa Hospitals and Clinics <noreply@qualtrics-survey.com>

Fri 1/26, 11:08 AM
Sand, Lindsey

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care*. Click the link below to open.

[The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care](#)

Copyright is retained by University of Iowa Hospitals and Clinics. **Permission is not granted for placing on the internet.**

Citation: Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing*, 14(3), 175-182.
doi:10.1111/wvn.12223

In written material, please add the following statement:
Used/reprinted with permission from the University of Iowa Hospitals and Clinics, copyright 2015. For permission to use or reproduce, please contact the University of Iowa Hospitals and Clinics at 319-384-9098.

Please contact UIHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

APPENDIX E. INVITATION TO PARTICIPATE



Department of Nursing
NDSU Dept. 2670
Fargo, ND 58108-6050
701-231-7395

Emergency Skills Competency Among Rural North Dakota Nurse Practitioners

My name is Lindsey Sand, and I am a DNP student at North Dakota State University. I am conducting a practice improvement project to improve emergency skills competencies of nurse practitioners in rural North Dakota by developing a Rural Emergency Skills Seminar. By participating in my project, it is my hope that rural nurse practitioners will have the resources, knowledge, and enhanced competency to provide evidence-based emergency skills when caring for a patient in the rural emergency department.

As a rural nurse practitioner preceptor within the state of North Dakota, you are invited to participate in my practice improvement project and attend the Rural Emergency Skills Seminar. Your participation is completely voluntary, and you may withdraw from the seminar at any time with no penalty to you.

There is minimal risk to participants. These known risks may include: loss of confidentiality due to face-to-face participation. By participating in the project, you may benefit by receiving education related to emergency skills. The seminar will be submitted for approval of up to 7 contact hours of accredited education. Use the attachment to this email to collect more information on the Rural Emergency Skills Seminar and RSVP to attend.

At the end of the Rural Emergency Skills Seminar, I will solicit your feedback on the seminar as well as obtain demographic information. It should take about 5-10 minutes to complete the post-seminar questions. This study is anonymous. That means that no one, not even members of the practice improvement project team, will know that the information you give comes from you.

If you have any questions about this project, please contact me at lindsey.sand@ndus.edu, or contact my advisor Adam Hohman at adam.hohman@ndus.edu

You have rights as a research participant. If you have questions about your rights or complaints about this research, you may talk to the research or contact the NDSU Human Research Protection Program at 701.231.8995, toll-free at 1-855-800-6717, or by email at ndsu.irb@ndsu.edu.

Thank you for your time and taking part in this practice improvement project,
Lindsey Sand, DNP-S
Email: lindsey.sand@ndus.edu
Cell: 701-400-5830

North Dakota State University School of Nursing DNP Program

Invites you to attend: **Rural Emergency Skills Seminar**

Speakers: Adam Hohman, DNP, APRN, FNP-BC

Shane Skeim, FNP-C

Nathan Tiedeman, DNP, FNP-C

Topics: **Procedural Sedation & Airway Management**

Cervical Spine Management

Imminent Childbirth & Post-delivery Care

Education will be completed through lecture, table-top discussion, and hands-on simulation scenarios

Learning Objectives: At the end of the presentation, participants will be able to:

- Properly select, assess, and manage the patient undergoing procedural sedation and analgesia
- Accurately diagnose, assess, immobilize, and care for the patient with a cervical spine injury
- Identify and properly manage imminent childbirth and post-delivery care

Friday November 16th, 2018 from 8:00am to 4:00pm

NDSU Stop and Go Center

1919 University Drive North

Fargo, ND 58102

RSVP to: Lindsey Sand at lindsey.sand@ndus.edu by Tuesday October 16th, 2018

Participation is completely free. Lunch will be provided.

If a participant has any dietary considerations, please include these in the RSVP as well.

This education activity will be submitted to the American Association of Nurse Practitioners for approval of up to 7 contact hours of accredited education.

Due to limited space and time, the first 10 RSVP's will be accepted. Any RSVP's after this will be placed onto a waiting list. If you are no longer able to attend, please reach out to me via email at least one week prior to the scheduled seminar date to allow for ample time to contact someone on the waiting list.

APPENDIX F. AANP CONTINUING EDUCATION APPROVAL LETTER



The Voice of the Nurse Practitioner®

October 3, 2018

Lindsey Sand
North Dakota Nurse Practitioner Association
4920 30th Avenue S Apt # 317
Fargo, ND. 58104

Dear Lindsey,

The continuing education activity "Rural Emergency Skills Seminar", sponsored by North Dakota Nurse Practitioner Association, is approved for continuing education by the American Association of Nurse Practitioners. Activity ID number 18093369 has been assigned to this application. All sessions are approved as submitted. This activity has been approved for 1 year (through October 31, 2019), provided no changes are made.

Use the following statement in your literature to indicate the maximum credit one person can obtain upon completion of this activity: "This activity is approved for 7.0 contact hour(s) of continuing education (which includes 0.5 hours of pharmacology) by the American Association of Nurse Practitioners. Activity ID 18093369. This activity was planned in accordance with AANP Accreditation Standards and Policies."

This approval is for the continuing education activity listed in the original application. With this approval, ALL changes to this program must be reported to the AANP for review as soon as they are identified. This includes, but is not limited to:

- session drops/additions
- speaker changes
- objective changes
- date and /or venue changes

Any changes to content or speakers that are not reviewed by the AANP are not approved for credit.

Refer to this activity's ID number with *all communication* pertaining to this application including the required post-activity reports. Attendance sheets and evaluation summaries are due to AANP one month after the activity's initial presentation (no later than December 16, 2018).

At this time, post-activity reports will be sent in via email to ceapps@aanp.org and not through the application system. Please find important information and instructions attached regarding mandatory post-activity reporting.

Best Regards,

Leigh Schmidt

Leigh Schmidt, MSN, RN, CMSRN, CHCP
Director of Accreditation

APPENDIX G. IRB APPROVAL



July 6, 2018

Dr. Adam Hohman
School of Nursing

Re: IRB Determination of Exempt Human Subjects Research:
Protocol #PH19003, "Emergency Skills Competency Among Rural North Dakota Nurse Practitioners"

Co-investigator(s) and research team: Lindsey Sand
Date of Exempt Determination: 7/6/2018 Expiration Date: 7/5/2021
Study site(s): NDSU
Sponsor: n/a

The above referenced human subjects research project has been certified as exempt (category #4) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, Protection of Human Subjects). This determination is based on the original protocol submission (received 7/3/2018).

Please also note the following:

- If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
- The study must be conducted as described in the approved protocol. Changes to this protocol must be approved prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
- Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Report any significant new findings that may affect the risks and benefits to the participants and the IRB.

Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.
Sincerely,

A handwritten signature in cursive script that reads "Kristy Shirley".

Kristy Shirley, CIP, Research Compliance Administrator

For more information regarding IRB Office submissions and guidelines, please consult http://www.ndsu.edu/research/integrity_compliance/irb/. This Institution has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

INSTITUTIONAL REVIEW BOARD
NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 701.231.8995 | Fax 701.231.8098 | ndsu.edu/irb

Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo ND 58102

NDSU is an EO/AAE university

November 8, 2018

Dr. Adam Hohman
School of Nursing

Re: IRB Determination of Exempt Human Subjects Research:
Protocol #PH19085, "Emergency Skills Competency Among Rural North Dakota Nurse Practitioners"

Co-investigator(s) and research team: Lindsey Sand
Date of Exempt Determination: 11/8/2018 Expiration Date: 11/7/2021
Study site(s): NDSU
Sponsor: n/a

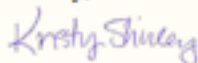
The above referenced human subjects research project has been determined exempt (category #2b) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, Protection of Human Subjects). This determination is based on the protocol submission (received 11/1/2018) with informational/consent sheet (received 11/6/2018).

Please also note the following:

- If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
- The study must be conducted as described in the approved protocol. Changes to this protocol must be approved prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
- Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Report any significant new findings that may affect the risks and benefits to the participants and the IRB.

Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.
Sincerely,



Kristy Shirley, CIP, Research Compliance Administrator

For more information regarding IRB Office submissions and guidelines, please consult http://www.ndsu.edu/research/integrity_compliance/irb/. This Institution has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

INSTITUTIONAL REVIEW BOARD

NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 701.231.8925 | Fax 701.231.8098 | ndsu.edu/irb

Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo ND 58102

NDSU is an ADA university

APPENDIX H. POSTTEST EVALUATION

1) How long have you been employed in your current rural position?

- Less than a year
- 1-2 years
- 3-5 years
- 6-9 years
- Over 9 years

2) Did you have previous experience as an advanced practice provider in a rural setting?

- Yes
- No

3) If you answered yes to the previous question, how many years of experience in rural care did you have prior to your current position?

- Less than a year
- 1-2 years
- 3-5 years
- 6-9 years
- Over 9 years

4) On average, how frequently do you work in a rural emergency department setting?

- Weekly
- Monthly
- Every 2-3 months
- Every 4-6 months
- Every 6-8 months
- Annually
- Less than annually

5) On average, what is your patient volume per 8-hour shift in the rural emergency department?

- 0-2 patients
- 3-5 patients
- 6-8 patients
- 9 or greater patients

6) After completing the educational seminar, I feel more comfortable and competent in implementing emergency care skills.

- Strongly agree
- Somewhat agree
- Indifferent
- Somewhat disagree
- Strongly disagree

7) After completing the educational seminar, how prepared do you feel in implementing the following skills?

Clinical Skills	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	Skill within your scope of practice? Y/N
Imminent Childbirth & Post-delivery Care					
Cervical Spine Management					
Procedural Sedation & Airway Management					

8) On average, how often do you complete the following skills in the emergency department?

Imminent Childbirth & Post-delivery Care

- More than once a month
 - If selected, how many times a month? _____
- Once a month
- Once every 2-3 months
- Once every 4-6 months
- Once every 7-12 months
- Less than once a year
- I have never performed this skill before in my practice
 - If selected, have you performed this skill in any form of training and, if so, what type of training? _____

Cervical Spine Management

- More than once a month
 - If selected, how many times a month? _____
- Once a month
- Once every 2-3 months
- Once every 4-6 months
- Once every 7-12 months
- Less than once a year
- I have never performed this skill before in my practice
 - If selected, have you performed this skill in any form of training and, if so, what type of training? _____

Procedural Sedation & Airway Management More than once a month

- If selected, how many times a month? _____
- Once a month
- Once every 2-3 months
- Once every 4-6 months
- Once every 7-12 months
- Less than once a year
- I have never performed this skill before in my practice
 - If selected, have you performed this skill in any form of training and, if so, what type of training? _____

9) The following teaching methods utilized in the educational seminar were conducive to my learning.

Teaching Method	Strongly agree	Somewhat agree	Indifferent	Somewhat Disagree	Strongly Disagree
PowerPoint lecture					
Tabletop discussion					
Hands-on skills application					

10) I would recommend this program to my colleagues.

- Strongly agree
- Somewhat agree
- Indifferent
- Somewhat disagree
- Strongly disagree

11) The level of content in the educational seminar for nurse practitioners was:

- Too advanced
- Appropriate
- Too simple

12) Were there other emergency care competencies you would have rather been educated on?

- Yes
- No

13) If you answered yes to question 12, list the top 3 skills you would have liked to receive training on.

- a.
- b.
- c.

14) Do you feel this educational seminar would have been beneficial as a nurse practitioner student?

- Yes
- No

15) Please post any suggestions or comments about this educational seminar.

APPENDIX I. CURRICULUM EXAMPLE

Week	Topic	Suggested Modalities	Suggested Skills
Week 1	Management of Patient Health/Illness Status	PowerPoint lecture, discussion, case-studies	<ul style="list-style-type: none"> • Triage and EMTALA scenarios • Order and interpret diagnostic tests
Week 2	Professional Role	PowerPoint lecture, discussion, case-studies	<ul style="list-style-type: none"> • Legal and ethical scenarios
Week 3	Airway, Breathing, Circulation, and disability procedures	PowerPoint lecture, discussion, hands-on skills practice	<ul style="list-style-type: none"> • Intubation • IO access • Procedural Sedation
Week 4	Skin and Wound Care Procedures	PowerPoint lecture, discussion, hands-on skills practice	<ul style="list-style-type: none"> • Woods lamp • Finger/toenail procedures • Minor burn debridement
Week 5	Skin and Wound Care Procedures	PowerPoint lecture, discussion, hands-on skills practice	<ul style="list-style-type: none"> • Foreign body removal • Local anesthesia injection • Laceration repair • Wounds incision, drainage, and packing
Week 6	HEENT Procedures	PowerPoint lecture, discussion, hands-on skills practice	<ul style="list-style-type: none"> • Dilatation and fluorescein staining • Control epistaxis • Cerumen impaction curettage
Week 7	Chest and Abdomen	PowerPoint lecture, discussion, hands-on skills practice	<ul style="list-style-type: none"> • Needle thoracostomy • Replace gastrostomy tube
Week 8	Neck, Back, and Spine Procedures	PowerPoint lecture, discussion, case studies, hands-on skills practice	<ul style="list-style-type: none"> • Radiograph interpretation of spine • C-spine immobilization • Lumbar puncture
Week 9	Gynecologic, Genitourinary, and Rectal Procedures	PowerPoint lecture, discussion, case studies, hands-on skills practice	<ul style="list-style-type: none"> • Incise and drain Bartholin's cyst • Imminent childbirth and post-delivery care • Thrombosed hemorrhoid incision
Week 10	Extremity Procedures	PowerPoint lecture, discussion, case studies, hands-on skills practice	<ul style="list-style-type: none"> • Fracture and dislocation reduction • Splint/cast application and removal
Week 11	Extremity Procedures	PowerPoint lecture, discussion, case studies, hands-on skills practice	<ul style="list-style-type: none"> • Arthrocentesis • Compartment pressure • Digital nerve block
Week 12	Final	Skills check-off	

EXECUTIVE SUMMARY

Emergency Skills Competency Among Rural North Dakota Nurse Practitioners

The NP's distinct qualifications and thorough education render NPs as prime candidates to improve access to quality care in rural areas.

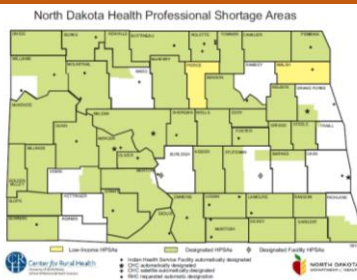
However, increased initial and continuing emergency care education is needed to support the rural NP working in the ED.

INTRODUCTION

Many people with medical emergencies in rural areas would go untreated without the presence of critical access hospitals (CAH). Nurse practitioners (NPs) employed as rural healthcare providers commonly assume the roles of primary care provider in the clinic and hospitalist and emergency department (ED) provider in the CAH. In a rural setting, comprehensive emergency care training is imperative as the NP may be the sole provider on-call when a critical patient presents to the ED. A critical issue for new NPs, particularly new rural NPs, is preparation for practice, often producing feelings of frustration and inadequacy. A lack of confidence in emergency skills and procedures due to the infrequency of use, irregular competency validation, and the lack of structured training are causing discomfort and increases risk for patient safety. Increased initial emergency care education and continued sustainment of rural NPs' emergency skills is essential to the future of rural healthcare and patient safety.

PROJECT DESCRIPTION

The purpose of the practice improvement project was to identify rural NPs' perceived level of preparedness and competency in implementing emergency care skills and develop an emergency skills seminar to increase rural NPs' perceived level of preparedness and competency in implementing emergency skills. Secondary data analysis of the Rural Nurse Practitioner Skills Needs Assessment, previously administered to rural North Dakota (ND) NP preceptors, was completed. Secondary analysis of the needs assessment led to the development of an evidence-based emergency skills seminar, the Rural Emergency Skills Seminar. The seminar provided education on three emergency skills: Procedural sedation and airway management, cervical spine management, and imminent childbirth and post-delivery care. Participants were rural ND NP preceptors and North Dakota State University Doctor of Nursing Practice (DNP) students. At the end of the seminar, participants were offered a posttest to complete.



(Center for Rural Health, 2018)

PROJECT RESULTS

Rural Nurse Practitioner Needs Assessment

- Analysis of the needs assessment revealed a majority of the rural NP preceptors felt unprepared or somewhat prepared in implementing 41 of the 51 emergency care skills within the needs assessment.
- A correlation was not found between years of experience in participants' current rural position or amount of orientation or training with perceived level of preparedness.
- Basic life support, advanced cardiovascular life support, pediatric advanced life support, advanced trauma life support, and comprehensive advanced life support were the top five types of emergency care specific education that were included in participants' orientation or training.
- Comments left by participants suggesting changes to orientation or training revealed themes in education, orientation, and residency.

Rural Emergency Skills Seminar

- The results of the seminar posttest revealed the seminar to be an effective educational experience.
- Comparison of the Rural Nurse Practitioner Needs Assessment results to the Rural Emergency Skills Seminar posttest results revealed an increased perceived level of preparedness in completing the emergency skills taught in the Rural Emergency Skills Seminar.
- The seminar posttest revealed the skills covered within the seminar were not frequently completed by participants in the ED.
- A numeric trend was not found between frequency of working in a rural ER and frequency of skill completion.

RECOMMENDATIONS

The positive results from evaluation of the Rural Emergency Skills Seminar indicate that educational opportunities with didactic and hands-on application enhances knowledge and skill of ED skills/procedures. Any NP currently working or planning to work in a rural area should seek out education related to rural emergency care at least annually. Given the wide variety of orientation and past experiences of NPs, some continuing education may need to be driven by the NP instead of the institution. Attending education developed specifically for the rural ED setting or specifically on acute, critical, or emergent disease management that is structured with a wide variety of learning opportunities is recommended to best support the rural ED provider.

In order to reach more rural NPs, it is recommended that the Rural Emergency Skills Seminar be repeated. In addition, developing the seminar to include education on other clinical skills, such as those identified in the Rural Nurse Practitioner Skill Needs Assessment data, would further educate rural NPs in emergency care.

To support NP students planning to work in a rural area, it is recommended that more Family Nurse Practitioner programs implement didactic and clinical content covering emergent care into their curricula as an elective class. Providing the education within ND DNP curriculums would further support future NP graduates to provide care in rural ND, a state where numerous Health Professional Shortage Areas exist and where the presence of CAH EDs is imperative for access to healthcare. Incentives, such as grant funding or other financial incentives, could be provided to ND DNP programs that provide emergency care education within their curriculum.