Nurse Anesthesiologist Knowledge of Regional Anesthesia

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University of Saint Francis

DNP Scholarly Project Final Approvals

The DNP student Jonathan Becker **and the Scholarly Project** _____

_____ **meet all the requirements for the degree of Doctor of Nursing Practice at University of Saint Francis-Fort Wayne, IN.**

Date of Final Approval: 6/18/21

DNP Student
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Graduate Nursing Program Director
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Copies to: Student File, Graduate office and attached to the Final Project Manuscript.

Abstract

Background: In multiple countries including the United States of America (USA), 86% of patients experience postoperative pain. A gap exists between the evidence that supports the use of multimodal pain management including regional anesthesia and adoption of best practice among anesthesia providers. The use of regional anesthesia is an effective proven way to both reduce post-operative pain and decrease negative side effects of poorly controlled pain. *Methodology:* A regional anesthesia project such as this workshop seeks to identify if an in-person hands on workshop increases the knowledge of interscalene and adductor canal regional anesthesia blocks. *Findings:* As a group, student registered nurse anesthetist (SRNA) participants had a 13% increase in scores from the pretest to the posttest. All of the participants' scored 100% on the regional anesthesia ultrasound check off portion of the workshop. All of the participants confidence levels increased from their pre workshop survey to their post workshop survey by at least 20%. All SRNA participants show ability to identify the revenue benefits of using regional anesthesia compared to traditional anesthesia methods. *Conclusion:* The findings from this workshop show that a regional anesthesia workshop can increase the knowledge and confidence of regional anesthesia, and this can be translated into future use of regional anesthesia.

Final Project Approval Form

UNIVERSITY of SAINT FRANCIS

DNP Scholarly Project Proposal Initial Approval

To: Jonathan Becker, DNP-NAP Student

From: Dr. Susan Lown, Course Coordinator NURS 715

Re: DNP Project Proposal Review Council Endorsement

Date: 11-13-2020

DNP Scholarly Project Title: Nurse Anesthesiologist Knowledge of Regional Anesthesia

DNP Scholarly Project Review Council:

DNP Project Advisor Signature:

Wendy Clark DNP, RN, FNP-BC

Dr. Wendy Clark, Associate Professor and Graduate Nursing Program Director

DNP Project Proposal Review Council Member Signature:

Dr. Gregory Louck, Assistant Professor Division of Nursing and Assistant Director Nurse Anesthesia Program

DNP Project Proposal Review Council Member Signature:

Susan Lown, DNP, RN, CNE

Dr. Susan Lown, Associate Professor Division of Nursing

Date of initial approval by DNP Scholarly Project Review Council: 11-13-2020

Wendy Clark DNP, RN, FNP-BC

1 - Student File
2 - Attached to Proposal

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Chapter 1: Introduction

Problem Statement

In multiple countries including the United States of America (USA), 86% of patients experience postoperative pain (Tong, Habib, Miller, et al., 2014). Only 50 to 60% of patients have adequately controlled pain when being measured at six hours and 24 hours postoperatively. Additionally, 14% of patients have adequate pain relief during activity at the six and 24 hours postoperatively (Geisler, Dahl, Karlsen, et al., 2017). When it comes to pain management, there is a gap between the evidence that supports the use of multimodal pain management including regional anesthesia and adoption of best practice among anesthesia providers. This is a problem across the state of Indiana and across the United States.

Background

The evidence shows that an opioid only technique of controlling post-operative pain has led to hyperalgesia, delirium, opioid addiction, and an expectation that surgery should be pain free (Geisler et al., 2017; Gerbershagen et al., 2013; Frauenknecht et al., 2019; Tong et al., 2014). Using an opioid only technique has caused higher incidences of postoperative nausea and vomiting, respiratory depression, re-intubation, ileus, longer hospital stays, opioid addiction, and acute pain turning into chronic pain (Gerbershagen et al., 2013). Not only does an opioid only technique lead to complications postoperatively, but also it does not adequately control the patient's pain. An opioid only technique only works on specific receptors instead of targeting multiple pain receptors (Tong et al., 2014). When, a patient's pain is not adequately controlled it leads to pneumonia, deep vein thrombosis, infection, and delayed wound healing (Tong et al., 2014). These complications will result in delayed discharge that cost the hospital more money

and lead to patient dissatisfaction with their surgery experience (Tong et al., 2014). Poor management of postoperative pain is in the top three of the medical complications that lead to delayed discharge after an ambulatory surgery (Tong et al., 2014). There are many side effects that occur from using an opioid only technique for post-operative pain control. The use of regional anesthesia is an effective proven way to both reduce post-operative pain and decrease negative side effects of poorly controlled pain.

PICOT Question

Will a regional anesthesia workshop increase student registered nurse anesthetist (SRNA) knowledge of regional anesthesia?

Practice/Knowledge Gap

The use of regional anesthesia among Indiana Association of Nurse Anesthetist (INANA) members was assessed during a regional anesthesia presentation at the Spring 2020 INANA conference. The results were that only 62% of CRNA's at the conference used regional anesthesia when the evidence showed that it was best practice. The remainder of providers do not use regional anesthesia in their practice. Barriers identified to using regional anesthesia are patient refusal, patient contraindication, surgeon preference, lack of facility backing, and provider knowledge gap (Frauenknecht et al., 2019; Geisler et al., 2017; Meissner et al., 2015; Tong et al., 2014). Postoperative outcomes such as postoperative nausea and vomiting, respiratory depression, re-intubation, ileus, longer hospital stays, opioid addiction, and acute pain turning into chronic pain are better when regional anesthesia is performed. Specifically these outcomes are better for these procedures; hemorrhoidectomy, inguinal hernia repair, open abdominal surgery, laparoscopic cholecystectomy, noncosmetic breast cancer surgery, radical open prostatectomy, thoracotomy, surgeries of the arm and shoulder, primary total hip

arthroplasty, and total knee arthroplasty (Geisler et al., 2017; Lovich-Sapola et al., 2015; Tong et al., 2014). An in-person hands on regional anesthesia workshop has the potential to increase the knowledge of nurse anesthesia students and therefore will close the knowledge gap among nurse anesthesia providers.

Needs Assessment

The use of a multimodal pain management strategy such as early recovery after surgery protocol (ERAS), regional anesthesia, non-opioid adjunct analgesia, and opioid sparing anesthesia technique will reduce poor outcomes (Geisler et al., 2017; Gerbershagen et al., 2013; Frauenknecht et al., 2019; Tong et al., 2014). Hospital and patient cost will decrease when regional anesthesia is used. In fact, there is a cost saving of $6,900 to $7,129 to the hospital per patient when regional anesthesia is used as a part of ERAS (Bowling et al.,2019; Frauenknecht et al., 2019; Geisler et al., 2017; Tong et al., 2014). The benefits of using these techniques are that patients will experience less side effects from the use of opioids which leads to decreased patient cost and hospitals making more money (Frauenknecht et al., 2019; Geisler et al., 2017; Tong et al., 2014). Reducing pain intraoperatively will better reduce pain postoperatively, versus starting pain management therapy in the postoperative period (Frauenknecht et al., 2019; Geisler et al., 2017; Meissner et al., 2015; Tong et al., 2014). Regional anesthesia is one of the best ways to decrease pain intraoperatively (Frauenknecht et al., 2019; Geisler et al., 2017; Meissner et al., 2015; Tong et al., 2014). There are multiple appropriate ways to treat pain and one of the most effective ways of doing this is through the utilization of regional anesthesia.

Pain lasting longer than one month after surgery occurs in 10 to 50% of patients undergoing common procedures (Chou et al., 2016; Geisler et al., 2017; Tong et al., 2014). Specifically, postoperative pain after thoracotomies, mastectomies, amputations, and inguinal

hernia repair has been shown to persist for more than one- two months in 30% of patients (Geisler et al., 2017; Lovich-Sapola et al., 2015; Tong et al., 2014). There is a problem with the current pain relief management strategies and regional anesthesia is a tool that can be utilized to adequately control pain when utilized for surgical and non-surgical procedures. Regional anesthesia has the potential to block 100% of a patient's pain for 12-24 hours, on average, after the block is performed (Chou et al., 2016; Geisler et al., 2017; Tong et al., 2014). When regional anesthesia is used with multimodal pain management strategies patients are able to have manageable pain relief without the negative effects of high doses of opioids.

DNP Project Overview

Scope of Project

This project included an in person regional anesthesia workshop for nurse anesthesia students. The goal of the workshop was to increase the knowledge of regional anesthesia. This project was a quality improvement project. The participants attended four stations where two different highly used regional anesthesia blocks were taught. Each participant attended the individual stations for one and half hours each. This allowed for ample hand on training and ultrasound practice. The participants practiced the same block at two different stations. This allowed for increased practice time in order to increase the skill and knowledge of the two most common regional anesthesia blocks used in practice. This was followed by a hands-on ultrasound technique teaching and finally a check off of the ultrasound technique. Each participant took a demographic questionnaire, pre and posttest, a pre and post workshop survey, and was checked off by a regional anesthesia expert (greater than 3 years of regional anesthesia experience) at each station. The project manager then compiled the data and ran statistics to determine if a

regional anesthesia workshop with hands on ultrasound practice increased the knowledge of regional anesthesia by each participant.

Stakeholders

Stakeholders for this project are the patients that will be receiving anesthesia from nurse anesthetist in the future. Those attending the regional anesthesia workshop are student registered nurse anesthetist; therefore, as participants they are also stakeholders. The hospitals that employ these nurse anesthetist students once they have been credentialed are also stakeholders as patients will be receiving regional anesthesia from some of the future anesthesia providers that are attending this workshop.

Budget and Resources

Cost

This project had a total budget of $205,810, with gifts in kind totaling $205,810. The project's revenue was $260,810 minus expenses of $205,810 for a total project benefit of $55,000. The benefit comes in the form of future regional anesthesia blocks being performed by the nurse anesthesia students who participate in the project. See Appendix A.

Description of Resources

Numerous resources are needed to implement a successful regional anesthesia workshop. Many of the resources were graciously given as gifts in kind. Resources for this project were room rentals, ultrasound machines, ultrasound gel, salary wages for regional anesthesia experts, print materials, personal computer, data analysis software, sheets and blankets to cover volunteer patients and patient scanning volunteers.

Process and Outcomes

General Timeline

The concept phase of the project started in January 2020; project development lasted until August 2020. Project refinement occurred August 2020 through September 2020. Invitations and finalizing details were sent out and confirmed between September 2020 and January 2021. The implementation phase started February 2021, and implementation occurred February 13, 2021. Data analysis occurred between February 14, 2021 and March 14, 2021. Dissemination occurred on June 17th, 2021 as a formation presentation to faculty and stakeholders.

Project Setting

The project took place at the University of Saint Francis in their teaching and learning spaces. Physical distancing guidelines were followed to mitigate risk of COVID-19. Physical distance guidelines were remaining greater than 6 feet apart and mask covering both mouth and nose and fitting snug around the face were required to be worn at all times. Each station was held in an individual classroom and designated for a specific peripheral nerve block. There were four different stations in total with five students at a station at the same time. Didactic instruction occurred first at each station followed by hands on ultrasound use.

The following team members were vital in making this project a success: Project advisor Dr. Clark, DNP USF, Team members: Dr. Osborne, DNP USF, Dr. Louck, DNAP USF, Dr. Cotrel, DMPNA USF, and Ben Ribesil, MSN. The project advisor gave pivotal insight into the development of the project and guided the project manager into forming a successful project. The team members were key in development and implementation of the regional anesthesia workshop including direct teaching of students during the workshop.

Participant inclusion/exclusion criteria

Participants were enrolled SRNAs in accredited nurse anesthesia programs from Marion University, and the University of Saint Francis. 20 SRNAs was the target number for participation in the workshop. No comparison group was used during this workshop. Baseline data was in the form of a pretest. Inclusion criteria for volunteer patients were male, and age 21-60. Exclusion criteria for volunteer patients was not being physically able to maintain position required for proper ultrasound scanning. Inclusion criteria was currently enrolled in an accredited nurse anesthesia program. Non- SRNA individuals were excluded from participating. If the SRNA, was not able to be present during the entire workshop they were excluded. If the SRNA, was not able to fully participate in the workshop they were excluded.

Expected Outcomes

The first expected outcome for this project was that there would be a 20% increase in the knowledge of regional anesthesia among SRNA participants. The second expected outcome was that an increase in knowledge would translate into an increase in future use of regional anesthesia among SRNA participants.

Risk Analysis

The risks associated with this project for SRNA participants were time requirements of six hours on February 13, 2021, feeling of anxiety while performing scanning in front of other participants and risk of not being competent in front of other anesthesia professionals. Another risk of participating in the workshop was the travel expenses. COVID exposure risk was appropriately mitigated to the state of Indiana and the University guidelines. Benefits associated with this project for participants were an increase knowledge of regional anesthesia and skill in

the use of ultrasound. Another benefit was compensation in the form of patient satisfaction and increased reimbursement for performing procedures at your future practice facility.

Risks associated with being a volunteer patient were being vulnerable to having portion of their body exposed for the purpose of ultrasound scanning. All of the patients were draped and covered with towels and blankets so that only the necessary portions of their body were exposed. Benefits associated with being a volunteer patient were helping to advance the knowledge of regional anesthesia among future CRNA's.

Although there were not any foreseeable medical issues that could arise because of this project, neither the project manager, nor the University of Saint Francis was not liable for any medical conditions that could have arisen as a result of participation in this project. Participants were provided access to medical care if an emergency had occurred through normal emergency operations such as 9-1-1.

Informed consent was obtained from each participant before being enrolled as participants in the regional anesthesia workshop. See Appendix B. Informed consent was also obtained from every volunteer patient. See Appendix C.

No deception was used during this project or during the regional anesthesia workshop. All participants' personal information was kept confidential and not shared with anyone. Personal information was encrypted and coded and stored on the cloud with password protection. The following identifiable factors were not collected, the participants name, birthdate, and mailing address. Any published data was in aggregated (group) form with no identifiable factors. Participation was completely voluntary, and individuals were able to withdrawal from participation in the project at any time for any reason without penalty. Participation or decision to not participate did not affect treatment or involve penalty or loss of benefits to which

participants were entitled to as a student at the University of Saint Francis. If an individual chose to withdrawal from participation in the project, any information from their participation was securely discarded.

Chapter 2: Synthesis of Supporting Evidence and Project Framework

Knowledge to Action Framework

The appointed framework for this project was Knowledge to Action (KTA). This framework was published by The Journal of Continuing Education in the Health Professions (Graham et al., 2006). The KTA framework focuses on taking current evidenced based research, translating that knowledge, and applying it to practice (Graham et al., 2006). For the purpose of increasing the knowledge of regional anesthesia among SRNAs the project manager applied the KTA framework to the project's design.

Graham et al. (2006) identified the two main cycles used for this framework as the knowledge generation and action cycle. During the knowledge generation stage, the project manager inquired about each SRNA's knowledge of regional anesthesia. Information from the student's current level of knowledge was then synthesized (Field, Booth, Ilott, & Gerish, 2014). During the action cycle the goal is to take the knowledge that was generated and then implement it into practice (Graham et al., 2006). This is how evidenced based practice improves patient outcomes. The project then evaluated if the SRNAs knowledge of regional anesthesia increased because of the education that took place.

KTA is a complex process that involves many steps, but through this framework, change can happen (White, 2016). The goal of implementing the KTA model in this project is to provide knowledge adaption and practice change in providers who have a stake in improving patient care. Regional anesthesia consists of evidenced based procedures that improve patient outcomes.

Supporting Evidence and Literature Review

An exhaustive literature review was conducted on the benefits, risk, and outcomes of regional anesthesia compared to other methods of pain control. The intensive literature review spanned seven databases were five different filters were applied to narrow the data. The databases included: Cochrane Library, CINAHL, Google Scholar, ProQuest, and PubMed. Search terms included: Post-operative pain management, Opioids, Regional Anesthesia, Post-operative pain, and Anesthesia Conduction. In total 72 articles were reviewed and 37 of those articles were included in conducting this literature review. Articles were only used if the publication date fell within the range of 2005-2020, with the majority of the dates falling within the last five years. The evidence from this exhaustive literature review gave insight that was used to guide the course of this project.

Why Should Regional Anesthesia be Used? Surgical patients experience pain postoperatively at a rate of 86%. Of the 86% only 50 to 60% of patients have adequately controlled pain when being measured at six hours and 24 hours postoperatively. Furthermore, only 14% of patients have adequate pain relief when activity begins again. Pain lasting longer than one month after surgery occurs in 10% to 50% of patients undergoing common medical procedures (Chou et al., 2016; Geisler et al., 2017; Tong et al., 2014). Specifically, postoperative pain after thoracotomies, mastectomies, amputations, and inguinal hernia repair has been shown to persist for more than one to two months in 30% of patients (Geisler et al., 2017; Lovich-Sapola et al., 2015; Tong et al., 2014). There is a problem with the current pain relief management strategies, and regional anesthesia is a tool that can be utilized to adequately control pain from surgical and non-surgical procedures. Regional anesthesia has the potential to inhibit 100% of a patient's pain for 12-24 hours, on average, after the nerve block is performed (Chou et

al., 2016; Geisler et al., 2017; Tong et al., 2014). When regional anesthesia is used with multimodal pain management strategies, patients are able to have manageable pain relief without the negative effects of high doses of opioids.

Negative Effects of Poorly Controlled Pain. When a patient undergoes surgery, there are varying degrees of pain that occur, based upon surgery type, patient's pain threshold, and patients' level of exposure to opioids. Poorly controlled pain has been proven to cause significant negative effects. Dissatisfaction with surgery because of poor pain control is one of the most common reasons for a patient to report a bad surgical experience. This results in decreased hospital reimbursement from the Centers for Medicare and Medicaid services (CMS) (Tawil, Iskandar, & Salameh, 2018). This is because the negative effects of pain result in delayed discharge from the hospital and ultimately result in higher cost for the hospital and patient (Geisler et al., 2017; Gerbershagen et al., 2013; Frauenknecht et al., 2019; Tong et al., 2014). The well documented negative effects discussed above alert anesthesia providers of the danger of poorly controlled pain and the dissatisfaction it causes among patients.

Opioid-Only Technique vs. Regional. When an opioid-only technique to control pain is used, there are several negative side effects that occur. These side effects include higher incidences of postoperative nausea and vomiting, respiratory depression, re-intubation, ileus, longer hospital stays, opioid addiction, and acute pain that turns into chronic pain (Gerbershagen et al., 2013; Altıparmak, Korkmaz, Uysal, Turan, & Gümüş, 2019; Cozowicz et al., 2019; Lovejoy et al., 2019). An opioid only technique leads to hyperalgesia, delirium, opioid addiction, and an expectation that surgery can be pain free (Gerbershagen et al., 2013; Altıparmak, Korkmaz, Uysal, Turan, & Gümüş, 2019; Cozowicz et al., 2019; Lovejoy et al., 2019). Regional anesthesia with sparing use of opioids or no opioids at all decreases these negative side effects or

eliminates many of them altogether (Frauenknecht et al., 2019; Geisler et al., 2017; Tong et al., 2014). The evidence described above shows that controlling post-operative pain with an opioid only technique is not the most effective and has more side effects associated with it compared to an opioid sparing technique combined with regional anesthesia.

What does the Evidence Say? Starting pain control modalities preoperatively and continuing them intraoperatively will better reduce pain postoperatively versus starting pain management therapy in the postoperative period (Frauenknecht et al., 2019; Geisler et al., 2017; Meissner et al., 2015; Tong et al., 2014). One of the methods to completely block all of the pain pathways along the dermatome levels that are associated with a specific surgery is through injection of local anesthetics directly in the area surrounding the nerve bundles. This procedure is known as regional anesthesia (Frauenknecht et al., 2019; Geisler et al., 2017; Meissner et al., 2015; Tong et al., 2014). Regional anesthesia also decreases the instances of postoperative cognitive disfunction, delirium, and complications of dementia associated with opioid consumption (Denny & Such, 2018; Sprung et al., 2019). Regional anesthesia is a proven pain management therapy that decreases the use of opioids, while still adequately controlling patients' pain. This pain management strategy is effective and decreases the side effects of opioids and post-operative pain.

When Should Anesthesia Providers Use Regional Anesthesia? According to Buddemeyer et al. (2019) using a quadratus lumborum block for primary total hip arthroplasty is associated with decreased opioid requirements up to 48 hours after surgery. It is also associated with a decreased pain score for up to 12 hours and a decreased post anesthesia care unit length of stay. Another type of block combination that can be used for reduction in postoperative pain and opioid consumption in a hip arthroplasty is a femoral nerve block and lateral femoral cutaneous

nerve block (Ghabach, Elmawieh, Matta, & Helou, 2016). Both of these blocks are proven to reduce postoperative pain and the negative side effects of surgery when a patient undergoes a total hip arthroplasty.

A meta-analysis of randomized controlled trials shows that an adductor canal block, when compared to a periarticular injection analgesia, had better pain control when undergoing a total knee arthroplasty. Not only does the adductor canal block have better pain control, there was no statistically significant decrease in quadricep muscle strength, no increase in time until rehab, no increase in complications, or no increase length of stay (Zhang et al., 2019). Another study proved the same data when looking at anterior cruciate ligament repairs in pediatric patients (Lovejoy et al., 2019). Femoral and sciatic nerve blocks better controlled knee surgery patient's pain compared to periarticular injection analgesia when an anterior cruciate ligament repair was performed (Lovejoy et al., 2019). All of the data found in the evidence provided above supports that patients receiving a peripheral nerve block for a knee procedure experience better postoperative pain control than those who do not receive a nerve block.

According to the literature review the best way to control a patient's pain after breast surgery, including a mastectomy and breast reconstruction, was to use regional anesthesia. These procedures can be done with a few common blocks utilized, a pectoral block, paravertebral block, and an intercostal block. With paravertebral blocks have the highest incidence of pain reduction (Zinboonyahgoon et al., 2019; Altıparmak et al., 2019). Anesthesia providers must be the advocate for their patients and apply evidence to provide the best pain control, especially when it comes to surgeries of the extra thoracic cavity.

An interscalene block provides the most pain control and reduces opioid consumption the most when compared to periarticular injection for shoulder surgeries (Toma et al., 2019; Saito et

al., 2019). Alternatives include a supraclavicular block with or without an axillary block (Toma et al., 2019; Saito et al., 2019). Shoulder surgeries are common in the ambulatory surgery setting where patients are discharged within hours after their surgery. Therefore, the evidence proves that using regional anesthesia to control patient's pain for shoulder surgeries can provide the best pain control and allow for expedited discharge from these facilities.

Summary of Supporting Evidence

The use of a multimodal pain management strategies such as early recovery after surgery protocol (ERAS), regional anesthesia, non-opioid adjunct analgesia, and opioid sparing techniques will reduce poor outcomes related to poor pot operative pain management. Hospital and patient cost are decreased when regional anesthesia is used. In fact, there is a cost saving of $6,900 to $7,129 to the hospital per patient when regional anesthesia is used as a part of ERAS (Bowling et al.,2019; Frauenknecht et al., 2019; Geisler et al., 2017; Tong et al., 2014). Not only will regional anesthesia be financially viable for both patients and hospitals, patients will experience less side effects from the use of opioids and increased outcomes (Frauenknecht et al., 2019; Geisler et al., 2017; Tong et al., 2014). There are multiple ways to treat pain and one of the most beneficial way of doing this is through the utilization of regional anesthesia.

Chapter 3: Project Design

Project Design and Methodology

The design of this project was an evidenced based quality improvement project. This project's goal was to increase student nurse anesthetist's knowledge of regional anesthesia. As evidenced by the existing literature, regional anesthesia is best practice during many procedures. It has been determined that some providers do not have the knowledge to do these blocks on their own and results in other providers sacrificing their time to perform the block. If there is no

provider available to do the block, then the procedure is done without a block putting the patient at risk for poor pain management and poor outcomes. A workshop has the potential to improve this practice. The practice can be improved by educating students in order to increase their knowledge. Knowledge increase can lead to increased use in the future.

The project was designed to increase the knowledge of regional anesthesia among SRNA students using an in-person workshop that lasted 6 hours. Implementation methods were designed to focus on the development of a workshop that had the potential to increase the knowledge of regional anesthesia. The project manager worked with Dr. Clark, Dr. Osborne, and Dr. Louck to develop this workshop. The project was implemented in February 2021. Future evaluation in one year after the project implementation can help determine if long term knowledge was gained from this workshop.

The aims of this project are as follows:

- Increase the knowledge of regional anesthesia in the SRNA community
    - 1a: SRNA's total scores on regional anesthesia knowledge will increase from pre-test to post-test by 20% by the end of the workshop.
    - 1b: SRNA's will be able to correctly identify when it is best to use each block. With 100% accuracy by the end of the workshop.
    - 1c: SRNA will proficiently meet psychomotor demands of performing ultrasound guided anatomy identification of each block. Regional anesthesia expert will assess proficiency using an outcome measurement scoring sheet. SRNA's must meet all required components of the outcome measurement sheet in order to be deemed proficient in each block.
- 2: Influence the future use of regional anesthesia in the SRNA community

- 2a: 80% of SRNAs will state they are more confident in the use of regional anesthesia after attending this workshop.
- 2b: SRNAs will be able to correctly identify the revenue benefits of using regional anesthesia compared to traditional anesthesia methods by the end of the workshop with 100% accuracy.

The cognitive, affective, and psychomotor domains of assessment are proven ways of measuring if learning occurred (Hoque, 2016). This project will evaluate two of these learning domains during the regional anesthesia workshop.1a. cognitive: will be measured using a pretest and posttest 1b. cognitive: will be measured using proper identification of when to use regional anesthesia in practice. 1c. psychomotor domain: properly identify blocks using ultrasound. Observed or not observed by regional anesthesia expert.

Evaluation of the aims occurred from the data collected by participants having completed the demographic questionnaire, pre and posttest, workshop survey, and peripheral nerve block check off sheet. The comparison of the pre and posttest and the peripheral nerve block check off, allowed for evaluation of the effectiveness of the workshop in meeting the aims and outcomes of this project.

Ethical Considerations

This project was presented and approved by the University of Saint Francis Institutional Review Board (IRB). The project manager completed CITI training in human subject protection before presenting to the IRB at the University of Saint Francis. The University of Saint Francis is both the implementation site and the supporting university for this project. The CITI training certificate was completed on March 1, 2020. See Appendix E. All of the participants in the project were provided informed consent and signed a consent form. See Appendix B. All

volunteer patients were provided informed consent and signed a consent form. See Appendix C. Physical distancing was taken into account when designing the project and the appropriate COVID-19 guidelines according to the CDC and state of Indiana were incorporated. The dignity and respect of every participant and volunteer were upheld. The privacy and sensitivity of being a volunteer patient was considered while using appropriate methods to maintain the dignity of their bodies. All information from participants was securely and non-identifiably collected as described above in the risk analysis section of this paper.

Project Schedule

The project was implemented on February 13, 2021 from 0800 till 1400 in the form of a regional anesthesia workshop. The participants spent one and half hours at each station throughout the workshop. See Appendix D. The concept phase of the project started in January 2020; project development lasted until August 2020. Project refinement occurred August 2020 through September 2020. Invitations and finalizing details were sent out and confirmed between September 2020 and January 2021. The implementation phase started February 2021, and implementation occurred February 13, 2021. Data analysis occurred between February 14, 2021 and March 14, 2021.

Implementation Methods

This project focused on developing and implementing a regional anesthesia workshop with hands-on ultrasound training. The purpose of this project was to increase the knowledge of regional anesthesia among SRNAs. The project was implemented with a lecture portion of interscalene and adductor canal blocks. The participants attended two stations for interscalene and two stations for adductor canal blocks. Each station lasted one and a half hours to allow for ample practice and evaluation of learning by the content experts at each station. Each lecture

portion was followed by hands-on ultrasound practice with volunteers acting as scanning participants. After practicing the scanning, each participant was tested and evaluated by the content expert at the station for proficiency, determined by the peripheral nerve block check off tool. Each participant took a demographic questionnaire, pre and posttest, a pre and post workshop survey, and was checked off by a regional anesthesia expert at each station. The project manager then compiled the data and ran statistics to determine if a regional anesthesia workshop with hands on ultrasound practice increased the knowledge of regional anesthesia by each participant. The project findings were then presented to the faculty, students, and participants during a formal presentation in the summer of 2021.

Measures Tools/Instruments

The cognitive, affective, and psychomotor domains of assessment are proven ways of measuring if learning occurred (Hoque, 2016). This project will evaluate two of these learning domains during the regional anesthesia workshop The Cognitive domain: will be measured using a pretest and posttest. Cognitive domain: will be measured using proper identification of when to use regional anesthesia in practice. Psychomotor domain: properly identify blocks using ultrasound. The psychomotor domain of learning was evaluated by observed or not observed methods determined by the regional anesthesia experts and recorded on the peripheral nerve block check off sheet.

All instruments were created by the project manager and face validity was established by content experts. A demographic questionnaire, pre and posttest, workshop survey, and peripheral nerve block check off sheet are the tools that were created for this project. See Appendix H, I, J and K.

Each participant was given a folder with Appendix H, I, J and K inside. The folder and forms were blank of any participant identifiers. The forms were completed in a private setting and then each participant dropped off their folder in a data collection bin, monitored by the project manager, with all of the completed forms inside at the completion of the workshop. The folders were assigned random identification numbers by the project manager, before the participants received each folder. This information was then used to analyze the data and determine if the aims of the project were met.

Evaluation Plan

The project manager and regional anesthesia experts, with greater than 3 years of experience in regional anesthesia, at each station were responsible for collecting the data. The project manager compared the data collected from the participants to the aims and outcomes of the project. This evaluation method was used to determine if the projects aims and outcomes were met. The project manager was responsible for making sure that the data was complete. The project manager was responsible for storing the data. A log was kept on a private, locked, password protected, encrypted cloud drive. Excel and SPPS were used to conduct statistical test and data analysis. The project manager entered the data into the statistical package for analysis and cleaned the data prior to entry into the statistical software. The data was permanently destroyed after dissemination of the project in the summer of 2021. SPSS was used to conduct the following test, descriptive statistics and paired sample t-test. The data was then analyzed to determine if the aims and outcomes of this project were met. A previously completed power analysis determined a necessary sample size of 34 to determine statistical significance ($p < .05$).

Dissemination Plan

The project was disseminated in both a written format and a formal presentation to the USF DNP and Nurse Anesthesia program faculty. The written proposal was submitted to faculty for review and approval in the summer of 2021. A formal presentation was conducted in June 2021, with USF DNP students, Marion University Students, and faculty attending. The project was conducted at the University of Saint Francis and not at an outside facility, dissemination was conducted among participants and as described above. The project was published in the USF DNP Project Repository. The written and formal presentations included an executive summary and information about data analysis such as if the aims and outcomes of this project were met.

Chapter 4: Results and Outcomes Analysis

Data Collection Techniques

Data collection was accomplished in person during the regional anesthesia workshop. Each participant filled out the demographic questionnaire, pre-workshop survey, and the pre-test prior to the PowerPoint presentation on regional anesthesia. Following the presentation each participant spent 4 hours learning and practicing the peripheral nerve blocks adductor canal and interscalene. Each participant was checked off on these blocks. Lastly, each participant completed a post workshop survey and a post-test. Data was then entered into SPSS Version 27 followed by calculating both descriptive statistics and paired sample t-test using the SPSS software. A previously completed power analysis determined a necessary sample size of 34 to determine statistical significance ($p < .05$). The n was 10 participants and all of the pre and post workshop data was completed by all 10 participants.

Measures/Indicators

The data was evaluated on the ability to achieve learning outcomes. The scores on the pre-post survey and test were used to evaluate the project's success. The following were the learning outcomes that were used to evaluate the project's success. (1a) The SRNA's knowledge of regional anesthesia will increase from pre-test to posttest by 20% as a group by the end of the workshop. Each of the questions on the pre and posttest were used to evaluate if there was a 20% increase in the participants scores. See Appendix I for the pre and posttest questions. The table below shows that there was an increase of >20% or more for questions seven, eight, and ten. However, there was only a 10% increase for questions one, two, three, four and 6. There was no change in questions five and nine; both pre and posttest scores for these questions were 100% correct. As a group the ten participants had only a 13% increase in scores from the pretest to the posttest. Which did not meet the objective for this aim.

Pretest and Posttest Results for Learning Objective 1

Pre and Posttest question #	Pretest Score	Posttest Score	% change
1	80%	90%	10%
2	70%	80%	10%
3	100%	90%	-10%
4	90%	100%	10%
5	100%	100%	-
6	90%	100%	10%
7	50%	90%	40%
8	40%	80%	40%
9	100%	100%	-
10	80%	100%	20%
Total	80%	93%	13%

(1b) SRNA's will be able to correctly identify when it is best to use each block. With 100% accuracy by the end of the workshop. The peripheral nerve block check off was used to determine if this outcome was met. This outcome was determined by questions number four and six. This outcome was met as all of the participants were completely checked off at the end of the workshop by all of the regional anesthesia experts. Additionally, all of the participants scores on questions four and six were 100% on the posttest. See table above for details.

(1c) SRNA will proficiently meet psychomotor demands of performing ultrasound guided anatomy identification of each block. Regional anesthesia expert will assess proficiency using an outcome measurement scoring sheet. SRNA's must meet all required components of the outcome measurement sheet in order to be deemed proficient in each block. The peripheral nerve block

check off was used to determine if this outcome was met. All of the participants were determined to have met this outcome as evidenced by a completed check off form for all of the participants by all of the regional anesthesia experts. Multiple attempts were allowed if a student was not meeting the requirements with their initial attempt. This was part of the learning process, the more you perform and scan for regional anesthesia blocks, results in long term retention of skills and knowledge.

(2a) 80% of SRNAs will state they are more confident in the use of regional anesthesia after attending this workshop. This outcome was met using the pre and post workshop survey question number one. All of the participants confidence levels increased from their pre workshop survey to their post workshop survey. Therefore, this outcome was met and exceeded by 20%.

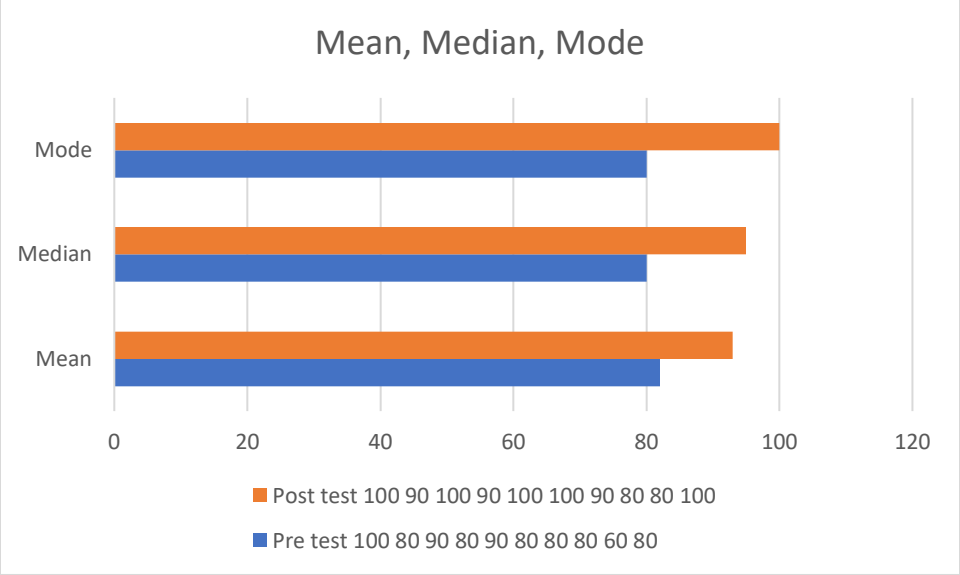
(2b) SRNAs will be able to correctly identify the revenue benefits of using regional anesthesia compared to traditional anesthesia methods by the end of the workshop with 100% accuracy. This outcome was met using the pre and posttest question number ten. All of the participants answered question number ten on the posttest correctly. Additionally, this score increased by 20% from the pretest to the posttest.

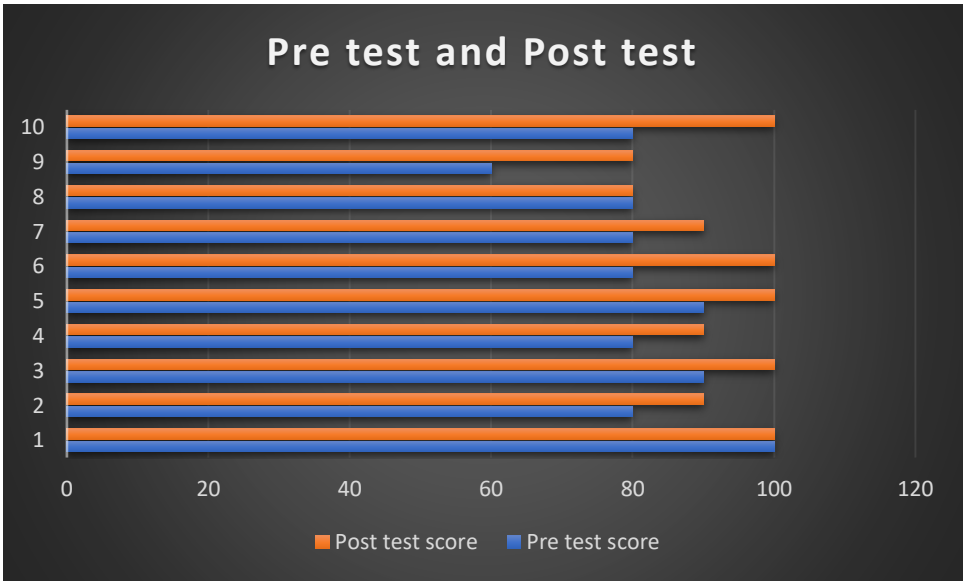
Data Analysis Inferences

The ten-question pretest mean score for the participants was 82% with a mode of 80% (N = 6). The lowest score on the test was 60% (N = 1) and the highest score was 100% (N = 1). Question number eight (regarding a common occurrence when performing an interscalene block) on the pretest was the most commonly missed question, 60% of the participants missed it (N = 6). The questions most commonly answered correctly were number three, five, and nine, with 100% of participants (N = 10) answering correctly. Compared to the pretest the posttest mean score was 93% (N = 10) with a mode of 100% (N = 5). The lowest score on the posttest was 80%

(N = 2) and the highest score was 100% (N = 5). The most commonly missed questions were two and eight on the posttest with 20% (N = 2) of the participants missing them. Questions number four, five, six, nine, and ten were the most commonly answered correctly on the posttest with 100% of the participants answering them correctly. These results can be viewed in Table 2 and 3.

Table 2, 3





A paired sample t-test was performed comparing the pretest scores and the posttest scores. The mean difference between pre and posttest was 10.00. With a confidence level of

.004, an upper bound of 15.84 and lower bound of 4.15. There was not a statistically significant difference between the pretest scores and posttest scores due to sample size ($p< 0.05$, $t – 3.873$, df 9). The statistical calculations for the paired sample t-test can be found in appendix M.

Limitations

A noted gap in the analysis is the sample size. With last minute cancelations, the total number of participants was only ten. The recommended participant number was 34 for statistically significant data when calculating a paired sample t-test. This was calculated with a power of 0.8 for a significance interval of <0.5 and an effect size of 0.500. Therefore, the calculations performed were percent change as seen above. Not only was the sample size lower than desired, but the participant experience mix was also skewed from the original set of anticipated participants. 80% of the participants had previously taken a full semester course of regional anesthesia including hands on ultrasound training. Only 20% of the participants had a one-day regional anesthesia training. This skewed the data to show a decreased change in scores from pre to posttest. Not only did the scores not change as desired, the room for improvement in ultrasound regional anesthesia skill was blunted by already having significant training by 80% of the participants.

Unanticipated Consequences

A few unanticipated consequences created speed bumps along the way. The first was COVID-19 which forced the design of the project to be changed from targeting CRNA's in current practice to SRNA's still in their training. Another unanticipated consequence was participant drop out.

When invitations were sent out back in November 2020 there were initially 20 participants from a regional university who signed up to attend. Follow up emails were sent in

mid-December 2020 and early January 2021 with several participants dropping out. New participants were added to the attendance list from the University of Saint Francis. This allowed for the total number of participants to remain at 20. Follow up emails were sent the first and second week of February with five participants from the regional university dropping out. Three days before the event three more students from the regional university dropped out. The day before the event two more students dropped out, one from the regional university and one from the University of Saint Francis. This brought the total number of participants from 20 to ten. Not only did this change the total number of participants but it also changed the skill level and prior exposure to regional anesthesia training that the participants had. Students from the University of Saint Francis had a full semester course in regional anesthesia and those from the regional university did not have formal regional anesthesia training prior to attending the workshop. The data reflects this vast change in the demographics of the participants. Attempts were made within the final two weeks prior to the workshop to add students from Evansville University, with no success. Although drop out from participants changed the make-up of the demographics there was still room for knowledge growth and the data reflected the knowledge increase.

Expenditures

An expenditure for the data analysis portion of this project was to purchase SPSS. This was a total cost of $60 and was funded by the project manager. The project manager gave this as a gift in-kind as a way to expand the knowledge of regional anesthesia. See appendix A.

Chapter 5: Leadership and Management

Organization Culture

The culture of healthcare has changed rapidly over the past ten years and a true assessment of how these changes have affected specific healthcare organizations is difficult to quantify. What has been even more troublesome is the effect this has taken on the employees of a healthcare organization. These questions were important to understand in order to develop a Doctor of Nursing Practice (DNP) project that fit into the organizational culture of where the project was implemented. The author of this paper sought to describe the importance of an organizational culture, bring clarity to the organizational culture of the University of Saint Francis, assess the organization through the Institutional and Organizational Assessment (IOA) model, and relate it to the Nurse Anesthesiologist Use of Regional Anesthesia project.

There are many different types of organizational cultures they can be described as a way to identify the way of thinking, behaving, and believing that members of an organization all have in common (Ingersoll et al., 2000). Another way to describe it is what the members say and do in the organization as a whole. There can be a few common descriptions of an organizations culture, these are known as positive, passive-defensive, or aggressive-defensive (Ingersoll et al., 2000). When an organization is deemed a positive culture, it promotes employee involvement and self-actualization (Joseph, 2015). Contrary, other types of cultures protect the status and security of the organization without promoting employee involvement (Ingersoll et al., 2000). It is ideal to have a culture that promotes employee contribution to the organization. This fosters a sense of ownership that leads to employees staying in one organization for the majority of their career.

Assessment of Organizational Culture

There are several different models that can help an organization assess its current culture. Many of these models are helpful and ultimately will guide the organization to a similar goal. The IOA model was used for this project as it fit well with the organization of the University of Saint Francis. The IOA model sought to evaluate the overall performance of the organization by determining its motivation, environment, performance, and capacity (Reflect Learn, 2020). The strengths and weakness of the Nurse Anesthesia Program were determined.

Organizational Motivation

The University of Saint Francis was founded in 1890 by the Sisters of Saint Francis of Perpetual Adoration. The university has a strong foundation in education, nursing, science, art, and music. It has grown and thrived over its 130-year history. Some things have always remained, the universities commitment to developing Christian educated leaders that serve others. The organization is rooted in the Franciscan values of the Catholic faith (University of Saint Francis, 2020).

The faculty and staff of this organization are valued, compensated, and involved in leadership decisions. Many of the staff have worked here for over 10 years showing the commitment the staff has to the university. Likewise the university is also committed to retaining and developing its staff.

In 2017, the university opened its Doctoral Nurse Anesthesia program and is the only doctoral program in the university's history. This program was created to educate highly skilled professionals in the art and science of anesthesia (University of Saint Francis, 2020). Upon graduation from this program students are ready to be excellent anesthesia providers in the workplace and leaders in the health system.

External Environment

The University of Saint Francis leadership is designed with a president, board of directors, vice president of academics, and vice president of student affairs, below them are the deans of each college, and within each college are directors of specific academic programs (University of Saint Francis, 2020). Students are highly valued in the nurse anesthesia program and their input has made real change throughout the entire history of the program.

Since the University of Saint Francis is a private institution and does not receive the same amount of federal funding that a public university does, there is a political influence by donors (University of Saint Francis, 2020). The university needs big donors to improve and create new facilities, grow and thrive. Therefore, a large dollar donor can influence small and big decisions the university makes, as long as it does not go against the catholic values of the organization.

The culture of the organization seeks to foster relationships, strive for excellence, adapt to the ever-changing world, and put the students first in every decision made (University of Saint Francis, 2020). Academic excellence is at the forefront of the decisions made in the nurse anesthesia program (University of Saint Francis, 2020). Support for the program is essential for a project to be successful. If the organization does not back what the student wants to do then the project would ultimately fail.

The organization supports the use of technology, innovation, and the resources needed to make each individual student, project, and program succeed (University of Saint Francis, 2020). This is crucial to the development and implementation of a project. The community, students, and employers are the main stakeholders for this organization and ultimately will be impacted the most by the decisions of the university.

Organizational Performance

The motivation and external environment are the foundation for the performance of the organization (Reflect Learn, 2020). In the past few years, success and expansion had been prominent at the University of Saint Francis. Several new academic buildings had been built or remodeled in the past 5 years. New programs had opened every year at the university. Students in the anesthesia program had been acknowledged as excellent clinicians and leaders in the academic and professional community (University of Saint Francis, 2020). Enrollment into the nurse anesthesia program had grown and hundreds of applicants have been assessed for admission into the program each year.

Despite these advancements and success's, the university board of directors had decided, without discussion with program directors, to close the doctoral nurse anesthesia program in the Fall of 2022. No new students were admitted after the last class began the program in the Fall of 2019 (University of Saint Francis, 2020). This decision did not follow suit with the historical decisions of the university. The university gave reason, for the closure, that the program was a financial strain on the university (University of Saint Francis, 2020). However, the program admitted 15 students each year who each pay over $110,000 for their degree. At the time of the announcement there were 39 students in the program which allots for 4.3 million dollars in revenue by the year 2022. Each graduating class generates 1.6 million in tuition dollars. The ability to expand the enrollment from 15 students to 20 was possible if money was an issue. Sure, there was upfront cost to the university that needed to be paid back. However, the data showed that this program was the most profitable of any other degree program in the university. These students were guaranteed to earn more money than any other degree awarded on the university campus and with the strong history of alumni donating to the university, there was

potential for future big dollar donations. It is hard to tell what the real reason the board of directors had for closing the program.

Even with the closing of the nurse anesthesia program, the university, faculty, and clinical partners continued to fully support the students until they finished their degree. The performance of the university made it a good place for project implementation.

Organizational Capacity

The university has a long-standing relationship with clinical partners across all of its degree programs. Many faculty serve on community and professional leadership boards. With a faculty member as sitting president of the Indiana Association of Nurse Anesthetist. There were numerous PhD and DNP faculty serving the students of the anesthesia program. Project advisers were assigned to each student and met with the student at least three times a semester. The full support of the university was felt and available to the students making project implementation outstanding.

Related to DNP Project

The motivation of the University of Saint Francis to begin strong higher education learning has been evident since its inception. Over the history of the university, it had continued to make advancements to benefit the student and to grow strong leaders. This had been evidenced by the opening of the DNP nurse anesthesia program as the first doctoral program. The universities motivation for existing and continuing to exist aligned with the goal of this DNP project.

The external environment of the university has always given freedom to those in leadership positions to make decisions that benefit the students. The faculty in the DNP nurse anesthesia program have always put that student's success first and they continued to support

each student throughout the creation and implementation of the DNP project. The university fully supported this project and the implementation of it on the university campus.

The organization is fully supportive of a student's success despite the closure of the program. The university continued to give every opportunity to utilize any resources that were available through the university. This project had no problem finding resources and tools to make the project a success.

The ultimate goal of this project was to advance nurse anesthesia education of regional anesthesia through an in-person workshop. This goal aligned with the goal of the university and the nurse anesthesia program. The assessment of the university deemed it to be a positive culture and therefore it was ripe for project implementation. The university had set itself up for this to be successful and because of this the project was a success.

Organizational assessment was key in making sure that the synchrony between the need of the organization and the project were aligned. This project utilized the IOA model to determine the organizational assessment of the University of Saint Francis. Upon assessment of the motivation, external environment, organizational performance, and organizational capacity the university was determined to be a good place for this project to be implemented.

Change Strategy

The author of this project utilized Kurt Lewin's theory of change to develop the change strategy of this project. This theory has three steps, from the three steps is the idea that change is a balance between forces that are restrictive to change and those that promote change (White, 2016). Re-education is a key component to permanent change (White, 2016). The use of regional anesthesia among nurse anesthetist first requires education before widespread change will occur.

The unfreezing phase is Lewin's model is where this process starts. An organization must increase their driving forces or decrease their restricting forces. This is accomplished by modifying the perception of practices to beneficial or non-beneficial (White, 2016). Within this project the goal was to move away from the thinking that opioids are the best way to control patient's pain. Once this occurs then regional anesthesia can be the driving force for change.

The change phase is the second of the three steps (White, 2016). The changing of thoughts, ideas, or behaviors is the primary goal of this step (White, 2016). This process must occur after the feelings about opioids and regional anesthesia are unfrozen. Actual change can occur when this is accomplished.

The final step in this process is the refreezing step. This makes the change permanent and prevents providers from going back to their old ways (White, 2016). In a way this is the most important step in the process. The refreezing step occurred during the regional anesthesia workshop.

Leadership Style

There are many different types of leadership frameworks, but the one that stood out to this author the most was the Transformational Leadership Framework. The four steps of this framework are Idealized Influence, Intellectual Stimulation, Inspirational Motivation, and Individualized Consideration (Accipio, 2020). Idealized Influence is described as the way in which a leader influences a group (Accipio, 2020). The transformational leader leads by example and therefore is well respected among the team members. The leader outlines a clear vision and creates a sense of belonging among the team members. This creates a drive to reach the goals and outcomes of the team. This creates space for other members wanting to progress and become leaders in the guidance of the transformational leader (Bass & Riggio, 2006). Intellectual

Stimulation is a quality that creates an environment that stimulates innovation, while forming new ideas for the betterment of themselves and others (Accipio, 2020). The transformational leader pushes its members to challenge thoughts and ideas in order to help grow themselves and the organization (Grossman & Valiga, 2017). Inspirational Motivation is when a leader raises team morale and motivates others to bring their best to the table (Accipio, 2020). If the leader can motivate the members to be committed to the goal, then naturally they will perform at a higher level (Grossman & Valiga, 2017). Individualized Consideration is an environment created by the leader to respect the diversity and celebrate their unique identities (Accipio, 2020). Overall, a transformational leader creates an inclusive environment that motivates, celebrates, and encourages the entire team to contribute and strive to do their best.

The project leader used transformational leadership to develop and implement the workshop. This was accomplished by leading with example, empowering others to bring forth ideas and opinions to help make the project a success. A clear goal and plan was created for this project. The leader made sure to keep the goal and plan of this project in the center when making decisions and discussions about the project were taking place. The leader developed the project by utilizing team members as key components of the project development. The team had space for creativity and their input was vital to the creation and implementation of this project.

Interprofessional Collaboration

The project team made was made up of Dr. Clark, Dr. Louck, Dr. Osborne, and Ben Riebesel, CRNA. Dr. Clark has earned the degree DNP and is a practicing family nurse practitioner, Dr. Louck's degree is a Doctor of Nurse Anesthesia Practice, and Dr. Osborne, has earned the degree DNP. Ben has his degree in Master of Science in Nurse Anesthesia. Other interprofessional collaboration occurred with consultation from different professionals at the

University of Saint Francis. The members of this team were fully invested in the success of this project.

Conflict Management

The support for this project was far above the project managers expectation and therefore made for a successful project implementation and dissemination. Minor conflicts arose and from discussions with project team members, these conflicts were overcome. A minor conflict that arose during the project development was the decision to develop tools, surveys, and questionnaires instead of using already developed ones. Once these tools were supported with evidence that they do measure what they were designed to measure, the conflict was solved, and progress was made. These vetted tools were important to successful implementation of the project. The result was an improved project because of the ability to identify areas of growth.

Conflict management in any realm of professional practice is very important. This is no different for doctoral projects or research projects. It takes the willingness of all parties to attack conflict head on with an open mind. If this is accomplished and this culture is created from the beginning, then conflicts are kept smell and not magnified.

Chapter 6: Discussion

Impact of Project

The goal of this project was to educate nurse anesthetist students on how to perform regional anesthesia and the benefits of it. The learning objectives for the regional anesthesia workshop were achieved. Four of the five outcomes were achieved. Even though the first outcome was not met there was still statistically significant increases in scores from the pretest to the post test scores. The intent of this workshop was to increase the knowledge of individual student nurse anesthetist, these individuals can take this knowledge and translate that into using regional anesthesia in their future practice. Not only can these providers increase the use of regional anesthesia they can also share their knowledge with other anesthesia providers. Sharing of knowledge to other anesthesia providers widens the impact of the project significantly. A major impact of this project is that educational workshops can and do have the potential to impact future anesthesia practice and the knowledge of its participants.

Decisions and Recommendations

The decision to hold an in-person workshop versus a virtual workshop was made because of the necessary hands-on training that is required when learning an ultrasound guided regional anesthesia block. Being an in-person workshop may have led to a decrease in the participation rate versus a virtual workshop. A recommendation for future students is to explore the idea of an in-person/virtual workshop via ZOOM or TEAMS. This would allow for multiple in person sites to all be connected via a video conference. All participants would have a regional anesthesia expert at each site guiding the training. This would allow for students from across the state of Indiana and possibly other states to participate without traveling.

An additional recommendation would be to apply for continuing education credits through the AANA. This would allow for expansion into not just students but into already practicing nurse anesthesiologist. It would also be an incentive for participation and potentially reduce drop out. Hospitals/ groups could fund workshops which would in turn increase revenue for these organizations.

Limitations of the Project

A limit to this project is a small sample size there are 117 SRNA's in the state of Indiana and only ten participated in the workshop. Additionally, there are 57,000 CRNA's and SRNA's in the United States, future workshops could potentially utilize the large number of providers across the country. The original participation number was 20 but last-minute cancelations dropped the participation to ten.

Application to Other Settings

The translation of this project to other settings besides students at a university such as to state organizations, national organizations, and anesthesia group education classes is a natural change of setting. An in person/virtual workshop is a possible application to another setting, the details of this are described above.

Strategies for Maintaining and Sustaining

This project was distributed once during a regional anesthesia workshop. It will not be a sustained project. However, the project was published in the USF DNP repository for others to use as a guideline for future projects. Others can continue building on the work that was done and accomplished from this project. This project is replicable and other students can use it to expand the development and education of regional anesthesia. Future state workshops can use this project to educate nurse anesthetist on regional anesthesia.

Lessons Learned

Planning is everything in creating a project, likely the plan will change many times but having a solid foundation to begin the project is key. Even if the original idea or thought is not what the final result is that is okay, and the project is better because of the change along the way. For instance, the setting was changed, participant demographics were changed, and timing of the workshop was changed for this project. However, because of a solid foundation this did not impact the success of this project. Project manager cannot do this alone, help is necessary to make a successful project. Those who seem to be a hindrance early on, are the biggest ally in the end. Despite only having 10 participants attend the workshop it was worth the time, resources, and effort. These 10 participants knowledge of regional anesthesia increased as a result of this project and therefore future patients will benefit. Even if one patient has a better surgical experience, than these efforts were worth it.

Chapter 7: Conclusion

Potential Project Impact on Health Outcomes Beyond Implementation site.

The opioid crisis impacts so many each day in America and in Indiana. Many drug addictions begin with legal consumption of opioids, with numerous having their first opioid during surgery. The knowledge and skills learned in this project by the participants has the potential to impact thousands of patients by reducing their surgical pain without using opioids. A regional anesthesia workshop also has the potential to save lives of those who have opioid use disorders, by not subjecting them to relapse after surgery. Likewise, regional anesthesia has the potential to decrease the number of those who will become addicted to opioids by not introducing patients to opioids if not necessary.

This project can have future impacts on other student's projects in building from the momentum of teaching opioid reducing anesthesia, such as regional anesthesia. Opioid sparing anesthesia includes regional anesthesia, and multimodal pain management strategies. A multimodal pain management strategy could be a future project for other students.

Health Policy Implications of Project

A current health policy that is common among many states and in the federal government is the reduction of opioid dependence. The use of regional anesthesia is an alternative to pain management other than the use of opioids. The data shows that regional anesthesia reduces the use of opioid consumption and therefore is an effective strategy in the battle against opioid dependence.

Proposed Future Direction for Practice

Future practice direction is to use regional anesthesia when beneficial for pain management as described by literature and research on the topic. The use of regional anesthesia

among CRNAs will have countless impacts on patients for years to come. As more providers develop the skills to efficiently and safely administer regional anesthesia, the opportunities for patients will increase. Competent providers have the ability to gain the trust of surgeons. Once surgeons see the benefits, the practice of regional anesthesia will be requested by the surgeon.

References

Accipio. (2020). Four I's of Transformational Leadership. *Bussiness Balls*.

Altıparmak, B., Korkmaz, M., Uysal, A., Turan, M., & Gümüş Demirbilek, S. (2019). Comparison of the effects of modified pectoral nerve block and erector spinae plane block on postoperative opioid consumption and pain scores of patients after radical mastectomy surgery: A prospective, randomized, controlled trial. *Journal of Clinical Anesthesia, 54*, 61-65. doi:10.1016/j.jclinane.2018.10.040

Apex. (2020). Regional Anesthesia. *Apex Anesthesia Review*. Retrieved from https://www.apexanesthesia.com/

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). New York.: Laurence Erlbaum Associates.

Bowling, T. (2019). Positive impacts of ultrasound-guided regional anesthesia on enhanced recovery pathways. *Anesthesiology News: Pain Medicine*.

Buddemeyer, K., DeBell, H., Elsharkawy, H., Godoy-Santos, A., Kalagara, H., Kukreja, P., Wajnsztejn, A. (2019). Posterior quadratus lumborum block for primary total hip arthroplasty analgesia: A comparative study. *Einstein (são Paulo), 17*(4). doi:10.31744/einstein_journal/2019ao4905

Cozowicz, C., Poeran, J., Zubizarreta, N., Liu, J., Weinstein, S., Pichler, L., Memtsoudis, S. (2019). Non-opioid analgesic modes of pain management are associated with reduced postoperative complications and resource utilization: A retrospective study of obstructive sleep apnea patients undergoing elective joint arthroplasty. *British Journal of Anaesthesia, 122*(1), 131-140. doi:10.1016/j.bja.2018.08.027

Chou, R., Gordon, D., De Leon-Casasola, O., Rosenberg, J., Bickler, S., Brennan, T., Wu, C. (2016). Management of postoperative pain: A clinical practice guideline from the American pain society, the American society of regional anesthesia and pain medicine, and the American society of anesthesiologists' committee on regional anesthesia, executive committee, and administrative council. *Journal of Pain, 17*(2), 131-157. doi:10.1016/j.jpain.2015.12.008

Chui, J., Lavi, R., Hegazy, A. F., Jones, P. M., Arellano, R., Yang, H., & Bainbridge, D. (2019). Identifying barriers to the use of ultrasound in the perioperative period: A survey of southwestern Ontario anesthesiologists. *British Medical College Health Services Research, 19*(1), 214. doi:10.1186/s12913-019-4040-2

Denny, D. L., & Such, T. L. (2018). Exploration of relationships between postoperative pain and subsyndromal delirium in older adults. *Nursing Research, 67*(6), 421–429.

Dybvik, L., Skraastad, E., Yeltayeva, A., Konkayev, A., Musaeva, T., Zabolotskikh, I., Kuklin, V. (2017). Influence of a new "call-out algorithm" for management of postoperative pain and its side effects on length of stay in hospital: A two-centre prospective randomized trial. *Pain Research & Management, 7*(5), 640-650.

Frauenknecht, J., Kirkham, K., Jacot-Guillarmod, A., & Albrecht, E. (2019). Analgesic impact of intra-operative opioids vs. opioid-free anesthesia: A systematic review and meta-analysis. *Association of Anesthetists, 74*(560), 651–662.

Field, B., Booth A., Ilott, I., & Gerish, K. (2014). Using the knowledge to action framework in practice: A citation and analysis and systematic review. *Implementation Science, 9*(1), 172.

Geisler, A., Dahl, J., Karlsen, A., Persson, E., & Mathiesen, O. (2017). Low degree of satisfactory individual pain relief in postoperative pain trials. *Acta Anaesthesiologica Scandinavica*, *61*, 83–90.

Gerbershagen, H., Aduckathil S., van Wijck J., Peelen L., Kalkman C., Meissner, W. (2013) Pain intensity on the first day after surgery: A prospective cohort study comparing 179 surgical procedures. *American Society of Anesthesiologist,118*(4), 934-44.

Ghabach, M., Elmawieh, J., Matta, M., & Helou, M. (2016). Combined block of the femoral and lateral femoral cutaneous nerves under ultrasound for post- operative analgesia in patients undergoing hip surgery: A double blind randomized trial. *Middle East Journal of Anaesthesiology, 23*(4), 421-6.

Graham, D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: time for a map? *Journal of Continuing Education in the Health Professions*. *26*(1), 13-24.

Grossman, S., & Valiga, T. M. (2017). *The new leadership challenge: Creating the future of nursing* (5th ed.). F. A. Davis Company.

Hebl, J., Kopp, S., Ali, M., Horlocker, T., Dilger, J., Lennon, R., & Pagnano, M. (2005). A comprehensive anesthesia protocol that emphasizes peripheral nerve blockade for total knee and total hip arthroplasty. *The Journal of Bone and Joint Surgery. American 87*, 6370.

Ingersoll, G. L., Kirsch, J. C., Merk, S. E., & Lightfoot, J. (2000). Relationship of organizational culture and readiness for change to employee commitment to the organization. *The Journal of Nursing Administration*, *30*(1), 11–20.

Joseph, M. L. (2015). Organizational culture and climate for promoting innovativeness. *The Journal of Nursing Administration*, *45*(3), 172–8.

Kulasegaran, S., Rohan, M., Pearless, L., & Hulme-Moir, M. (2017). Pre-peritoneal local anesthetic does not reduce post-operative pain in laparoscopic total extra-peritoneal inguinal hernia repair: Double-blinded randomized controlled trial. *Hernia : The Journal of Hernias and Abdominal Wall Surgery, 21*(6), 879-885. doi:10.1007/s10029-017-16721

Kumar, K., Kalyane, R., Singh, N., Nagaraja, P., Krishna, M., Babu, B., Manjunatha, N. (2018). Efficacy of bilateral pectoralis nerve block for ultrafast tracking and postoperative pain management in cardiac surgery. *Annals of Cardiac Anaesthesia, 21*(3), 333-338. doi:10.4103/aca.ACA_15_18

Lovejoy, J., Santana, L., Atanda, A., Mandel, D., Day, J., & Kiebzak, G. (2019). Comparison of postoperative pain scores and medication usage between three pain control strategies for pediatric anterior cruciate ligament (acl) surgery. *Orthopaedic Journal of Sports Medicine, 7*(3), 2325967119-0018. doi:10.1177/2325967119S00185

Levene, J., Weinstein, E., Cohen, M., Andreae, D., Chao, J., Johnson, M., & Andreae, M. (2019). Local anesthetics and regional anesthesia versus conventional analgesia for preventing persistent postoperative pain in adults and children: A Cochrane systematic review and meta-analysis update. *Journal of Clinical Anesthesia*, *55*, 116-127. doi:10.1016/j.jclinane.2018.12.043

Lovich-Sapola, J., Smith, C., & Brandt, C. (2015). Postoperative pain control. *Surgical Clinics of North America, 95*(1*)*, 301–318. doi: org/10.1016/j.suc.2014.10.002

Mahmood, A., Sultan, A., & Auldin, M. (2012). Barriers for anaesthetists in performing nerve blocks with ultrasound guidance. *British Journal of Medical Practitioners, 5*(1), 508-510.

Meissner, W., Coluzzi, F., Fletcher, D., Huygen, F., Morlion, B., Neugebauer, E., Pérez, A., & Pergolizzi, J. (2015) Improving the management of post-operative acute pain: Priorities for change. *Current Medical Research and Opinion*, *31*(11), 2131-2143.

Meissner, W., Huygen, F., Neugebauer, E., Osterbrink, J., Benhamou, D., Betteridge, N., Schäfer, M. (2018). Management of acute pain in the postoperative setting: The importance of quality indicators. *Current Medical Research and Opinion, 34*(1), 187-196.

Moran, K. J., Burson, R., & Conrad, D. (Eds.). (2020). The doctor of nursing practice project : A framework for success (Third). Jones & Bartlett Learning.

NYSORA. (2019). Regional anesthesia. *New York School of Regional Anesthesia.* Retrieved from https://app.nysora.com/

Reflect Learn. (2020). Universalia Institutional and Organizational Assessment Model (IOA Model). *Discover Organization Assessment*.

Saito, M., Tsukada, S., Fujita, N., Rahman, M., Morita, W., Kitamura, N., & Tasaki, A. (2019). Post-operative pain control following arthroscopic rotator cuff repair: Peri-articular injection versus interscalene brachial plexus block. *International Orthopaedics*, *43*(6), 1435-1441.

Sprung, J., Schulte, P., Knopman, D., Mielke, M., Petersen, R., Weingarten, T., Warner, D. (2019). Cognitive function after surgery with regional or general anesthesia: A population-based study. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association, 15*(10), 1243-1252. doi:10.1016/j.jalz.2019.06.4949

Toma, O., Persoons, B., Pogatzki-Zahn, E., Van de Velde, M., & Joshi, G. (2019). Prospect guideline for rotator cuff repair surgery: Systematic review and procedure-specific postoperative pain management recommendations. *Anaesthesia, 74*(10), 1320-1331. doi:10.1111/anae.14796

Tong, G., Habib, A., Miller, T., White, W., & Apfelbaum, J. (2014) Incidence, patient satisfaction, and perceptions of post-surgical pain: results from a US national survey, *Current Medical Research and Opinion*, *30*(1), 149-160, doi: 10.1185/03007995.2013.860019

Tawil, S., Iskandar, K., & Salameh, P. (2018). Pain management in hospitals: Patients' satisfaction and related barriers. *Pharmacy Practice, 16*(3), 108-150

University of Saint Francis. (2020). About. *USF*.

White, K. M., (2016). The science of translation and major frameworks. In K. M. White, S. Dudley-Brown, & M. F. Terhaar (Eds.), *Translation of evidence into nursing and health care* (2nd ed., pp. 41-42). New York, NY: Springer Publishing Company.

WRAE. (2020). Regional anesthesia. *Western Reserve Anesthesia Education.* Retrieved from https://www.wrae.net/

Yajnik, M., Hill, J., Hunter, O., Howard, S., Kim, T., Harrison, T., & Mariano, E. (2019). Patient education and engagement in postoperative pain management decreases opioid use following knee replacement surgery. *Patient Education and Counseling, 102*(2), 383-387.doi:10.1016/j.pec.2018.09.001

Yauger, Y., Bryngelson, J., Donohue, K., Lawhorn, L., Pitcher, B., Schoneboom, B., & Watts, D. (2010) Patient outcomes comparing CRNA administered peripheral nerve blocks and general anesthetics: A retrospective chart review in a US army same-day surgery center. *American Association of Nurse Anesthetist Journal, 78*(3), 215-220. Retrieved from www.aana.com/aanajournalonline.aspx

Zhang, L., Li, Q., Zhu, F., Liu, Jun., Zhang, Z., Zhang, Yu, H., Quan, Ren, F. (2019) Comparison of adductor canal block with periarticular infiltration analgesia in total knee arthroplasty; A meta-analysis of randomized controlled trials, *Medicine, 98*(50). 89-109

Zinboonyahgoon, N., Vlassakov, K., Lirk, P., Spivey, T., King, T., Dominici, L., Schreiber, K. (2019). Benefit of regional anaesthesia on postoperative pain following mastectomy: The influence of catastrophising. *British Journal of Anaesthesia, 123*(2), 302. doi:10.1016/j.bja.2019.01.041

Appendix A

NURS 658 DNP Project Budget Template				
Legend	Direct Costs USD			
	Indirect Costs USD			
	In-Kind Costs USD			
Project Expenses				
Salaries and Wages	**Description**	**2020**	**2021**	**Total**
DNP Project Manager	Jonathan Becler	25000	25000	50000
Regional Anesthesia Experts	Dr. Louck, Dr. Cotrell, Ben Reibesil, Billy Howard		2000	2,000
Patient Volunters	5		2000	2,000
				0
				0
Total Salary Costs		25000	29000	54,000
Startup Costs	**Description**	**Year 1**	**Year 2**	**Total**
Marketing		0	50	50
Team meetings		200	200	400
Project Training	Lunch For trainnees	0	100	100
				0
Total Start Up Costs		200	350	550
Supplies and Materials	**Description**	**Year 1**	**Year 2**	**Total**
Lunch for participants and volunteers	Chipotle Boxed Lunches	0	225	225
Room Rental Fees	Doermer 156A/B Doermer 161 Doermer 165 Doermer 166 Doermer 173A/B		1160	1,160
Scanning Gel				10
Total Supplies and Materials		0	1385	1,385
Capital Costs (costs >2,000)	**Description**	**Year 1**	**Year 2**	**Total**
Ultrasound machines	5 Machines	0	150000	150,000
				0
Total Capital Costs		0	150000	150,000
Total Expenses		25200	180735	205,935
Project Revenue	**Description**	**Year 1**	**Year 2**	**Total**
Patient Regional Aneshesia Encounters		0	55,000	55000
				0
				0
				0
				0
Total Project Revenue		0	55000	55000
Contributions/Gifts in Kind				
Donated Labor		25000	29000	54000
Donated Materials and Capital		200	151735	151935
Total Gifts in Kind		25200	180735	205935
Total Revenue		25200	235735	260935
Project Benefit/Loss				
Total Revenue		25200	235735	260935
Less Expenses		25200	180735	205,935
Total Project Benefit/Loss		0	55000	55,000

Appendix B

Informed Consent Participant Form

Nurse Anesthesiologist Use of Regional Anesthesia

Introduction and Explanation of The Purpose of The Project

I am Jonathan Becker a doctoral student, of the Department of Nurse Anesthesia at the University of Saint Francis. I am conducting a quality improvement project involving nurse anesthesia students from various universities and regional anesthesia. This project seeks to influence the knowledge of regional anesthesia by nurse anesthetist students. The project committee would appreciate your participation in this regional anesthesia workshop, as it has the potential to improve your knowledge in the use of regional anesthesia.

Procedures:

1. You will complete a demographic questionnaire, pre and posttest, peripheral nerve block check off sheet, and a post workshop survey.
2. Each participant will be evaluated on skill performance of regional anesthesia ultrasound use.
3. Each form will take approximately 5 minutes to complete and all information will be kept confidential.
4. Each participant will be asked to attend an in-person hands on workshop in the Spring of 2021.
5. The workshop will last approximately six hours. Majority of time spent performing skill development using ultrasound scanning technique. The scanning will take place with the help of nurse anesthesia student volunteers from the University of Saint Francis.
6. There will be approximately 20 participants from various nurse anesthesia programs in the project.

Alternative procedures.

Although, sending a VoiceThread lecture on different regional anesthesia blocks could help improve your knowledge of regional anesthesia, an in-person hands on workshop with ultrasound scanning is the best way to improve your knowledge and skill in the use of regional anesthesia.

Risk and Benefits.

1. Risks: Time requirements of six hours on a February 13th, 2021. Feeling of anxiety while performing scanning in front of other participants. Risk of not being competent in front of other anesthesia professionals. Travel expenses to workshop. COVID exposure risk was appropriate to the state of Indiana and the University guidelines.
2. Benefits: Increase knowledge of regional anesthesia and skill in the use of ultrasound. Compensation in the form of patient satisfaction and increased reimbursement for performing procedures at your practice facility.
3. Although there are not any forceable medical issues that will arise because of this project, Myself, Dr. Clark, or the University of Saint Francis is not liable for any medical conditions that may arise as a result of participation in this project. We will provide access to medical care if an emergency arises through normal emergency operations such as 9-1-1.

Safeguards.

1. All personal information will not be shared with anyone. Personal information will be encrypted and coded and stored on the cloud with password protection.
2. Any published data will be in aggregated (group) form with no identifiable factors.

Freedom to Withdrawal.

1. Participation is completely voluntary, and you may withdrawal from participation in the workshop at any time for any reason without penalty.
2. Participation or decision to not participate will not affect treatment or involve penalty or loss of benefits to which you are entitled to as a student at the University of Saint Francis. If you choose to withdrawal from participation in the project, any information we have from your participation will be securely disposed of.

Answers to Inquiries.

Once participation in the workshop is complete, if you wish to receive the results contact me via the email provided below. In the meantime, any questions can be directed to:

Jonathan Becker, SRNA

University of Saint Francis

Department of Nurse Anesthesia

2701 Spring Street

Fort Wayne, Indiana 46808

(260) 399-7700

Email: beckerjd@cougars.sf.edu

I have received an explanation of this project and agree to participate. I understand that my participation in this project is strictly voluntary.

Name:

Date:

This project has been approved by the University of Saint Francis' Institutional Review Boards for the Protection of Human Subjects for a one-year period.

Appendix C

Informed Consent Volunteer Form

Nurse Anesthesiologist Use of Regional Anesthesia

Introduction and Explanation of The Purpose of The Project

I am Jonathan Becker a doctoral student, of the Department of Nurse Anesthesia at the University of Saint Francis. I am conducting a quality improvement project involving nurse anesthesia students from various universities and regional anesthesia. This project seeks to influence the knowledge of regional anesthesia by nurse anesthetist students. The project committee would appreciate you volunteering your time for this regional anesthesia workshop, as it has the potential to improve these student participants knowledge in the use of regional anesthesia.

Procedures:

1. You will be volunteering to have student registered nurse anesthetist practice ultrasound scanning as you as their patient.
2. The workshop will last approximately six hours.
3. Five patient volunteers will be needed for this workshop.
4. There will be approximately 20 participants from various nurse anesthesia programs in the project.

Alternative procedures.

Although, sending a VoiceThread lecture on different regional anesthesia blocks could help improve knowledge of regional anesthesia, an in-person hands on workshop with ultrasound scanning is the best way to improve knowledge and skill in the use of regional anesthesia.

Risk and Benefits.

1. Risks: Time requirements of six hours on a Saturday in Spring of 2021. Feeling of anxiety while being a patient scanned in front of other participants. Travel expenses to workshop. COVID exposure risk was appropriate to the state of Indiana and the University guidelines.
2. Benefits: Increase knowledge of regional anesthesia and skill in the use of ultrasound for student registered nurse anesthetist. Compensation in the form of patient satisfaction and increased reimbursement for performing procedures at these SRNAs future practice facility.
3. Although there are not any forceable medical issues that will arise because of this project, Myself, Dr. Clark, or the University of Saint Francis is not liable for any medical conditions that may arise as a result of participation in this project. We will provide access to medical care if an emergency arises through normal emergency operations such as 9-1-1.

Safeguards.

1. No volunteer personal information will be collected
2. Your privacy and dignity are of the upmost importance during this volunteer opportunity
3. Coverings will be in place to keep only the necessary areas of your body exposed.
4. The neck and shoulder will be exposed during interscalene block.
5. The knee to mid-thigh will be exposed during adductor canal block.
6. Every other part of the body will be covered.

Freedom to Withdrawal.

1. Participation is completely voluntary, and you may withdrawal from volunteering in the workshop at any time for any reason without penalty.
2. Participation or decision to not volunteer will not affect treatment or involve penalty or loss of benefits to which you are entitled to as a student at the University of Saint Francis. If you choose to withdrawal from participation in the project, any information we have from your participation will be securely disposed of.

Answers to Inquiries.

Once participation in the workshop is complete, if you wish to receive the results contact me via the email provided below. In the meantime, any questions can be directed to:

Jonathan Becker, SRNA

University of Saint Francis

Department of Nurse Anesthesia

2701 Spring Street

Fort Wayne, Indiana 46808

(260) 399-7700

Email: beckerjd@cougars.sf.edu

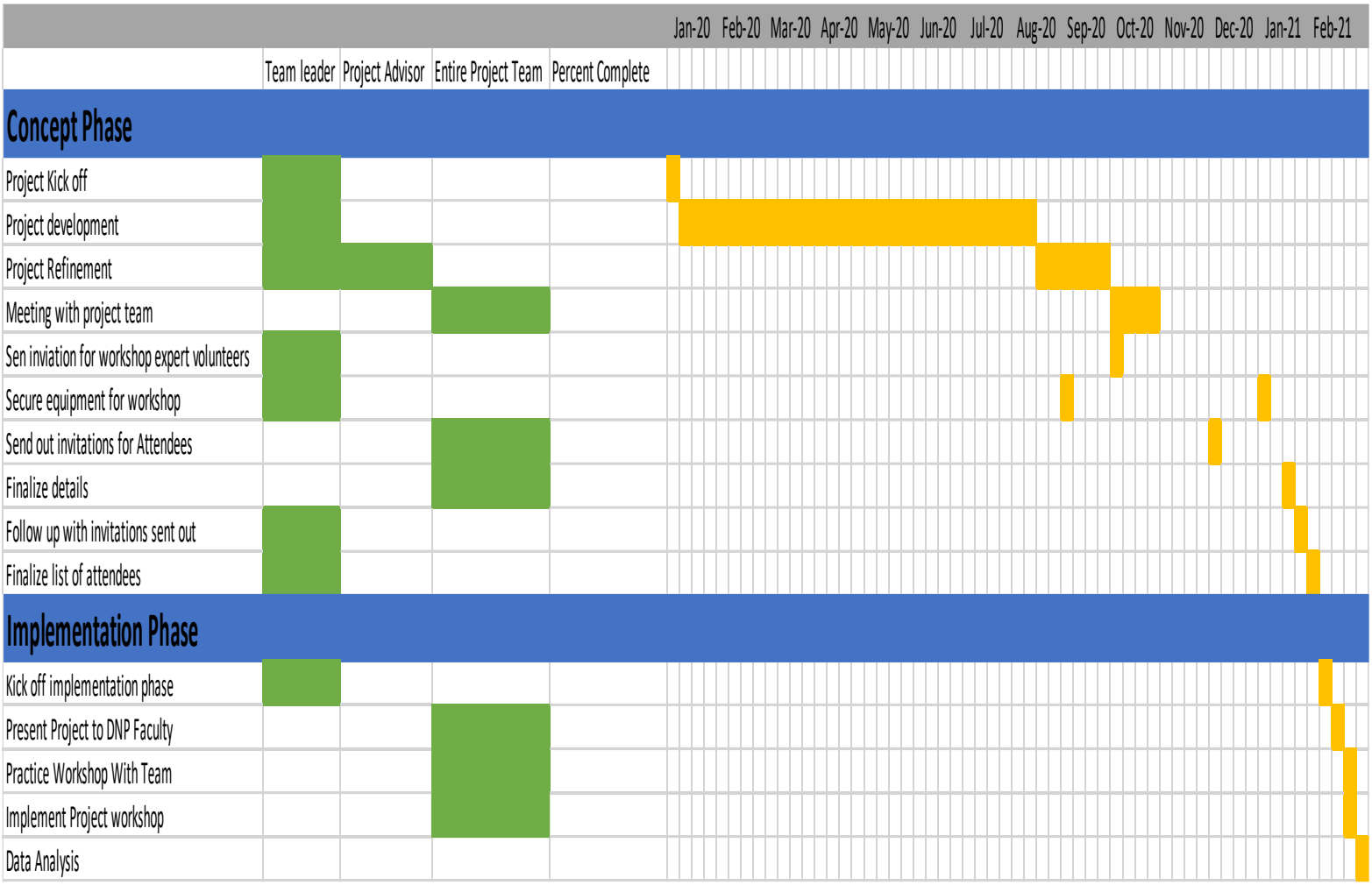
I have received an explanation of this project and agree to participate. I understand that my participation in this project is strictly voluntary.

Name:

Date:

This project has been approved by the University of Saint Francis' Institutional Review Boards for the Protection of Human Subjects for a one-year period.

Appendix D


Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Team leader
Project Advisor
Entire Project Team
Percent Complete
Concept Phase
Project Kick off
Project development
Project Refinement
Meeting with project team
Sen inviation for workshop expert volunteers
Secure equipment for workshop
Send out invitations for Attendees
Finalize details
Follow up with invitations sent out
Finalize list of attendees
Implementation Phase
Kick off implementation phase
Present Project to DNP Faculty
Practice Workshop With Team
Implement Project workshop
Data Analysis

Appendix E

University of Saint Francis
Institutional Review Board
Human Subjects Review Committee/ACUC/IBC
Institutional Review Board Approval Form

Protocol Number: 16009579278-HSRC

Review by (underline one): HSRC ACUC IBC

Date Reviewed: 10/12/2020
Principal Investigator: Jonathan Becker
Faculty Advisor: Dr. Wendy Clark
Protocol Title: Nurse anesthesiologist knowledge of regional anesthesia
Study Site(s): University of Saint Francis

Type of Proposal:
Original research
Replication or extension of previous research
Quality Improvement/Evidence-Based Practice Project

Items submitted for review:
- ☐ CITI Certificate
- ☐ Initial protocol
- ☐ Abstract
- ☐ Informed Consent Form (if applicable)
- ☐ Approval letter from outside institution - University of Saint Francis
- ☐ Other – explain: pre/post education surveys, demographic survey, evaluation survey, skills check list

Type of Review:
- ☐ Full Review
- ☐ Expedited Review
- ☐ Exempt Review

Approval:
- ☐ Approval granted on 10-12-2020
- ☐ Approval granted on _____ for a period of one year.
- ☐ Conditional approval* granted on _____ for a period of one year.
- ☐ Not approved*
- ☐ IRB approval is not required:
- ☐ Other

*Comments: _____

The committee performing this review is duly constituted and operates in accordance and compliance with local and federal regulations and guidelines.

Stephanie Oetting	*Stephanie Oetting*	10/12/2020
Printed Name (Chair or designee)	Signature	Date

Appendix F

September 3, 2020

University of Saint Francis Institutional Review Board:

This letter is being written in support of University of Saint Francis NAP/DNP student Jonathan Becker's Doctor of Nursing Practice Project Scholarly Project entitled Nurse Anesthesiologist Knowledge of Regional Anesthesia. The University of Saint Francis understands that the aims of the DNP Scholarly Project are to increase the knowledge of regional anesthesia among nurse anesthesia students.

The College of Health Sciences and the University of Saint Francis is supportive of the aims of the project. The University of Saint Francis is committed to allowing a nurse anesthesia regional workshop to be conducted on the university's campus for the purpose of educating nurse anesthesia students in regional anesthesia. While it is our belief that this project does not need to go through IRB approval, I will defer judgement of this to the IRB.

We commend Mr. Becker for his work to increase knowledge of regional anesthesia and are committed to the success of his project.

Sincerely,

Angela Harrell

Dr. Angela Harrell
Dean, College of Health Sciences
aharrell@sf.edu

2701 Spring Street
Fort Wayne, Indiana 46808

Phone: 260-399-7999
Fax: 260-399-8156
sf.edu

Appendix G

CITI Training Certificate

CITI PROGRAM

Completion Date 01-Mar-2020
Expiration Date N/A
Record ID 35629433

This is to certify that:

Jonathan Becker

Has completed the following CITI Program course:

Information Privacy Security (IPS) (Curriculum Group)
Researchers (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

University of Saint Francis

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wcefaae32-c35d-4742-93bd-d7585da4a433-35629433

CITI PROGRAM

Completion Date 03-Feb-2020
Expiration Date 02-Feb-2023
Record ID 35171135

This is to certify that:

Jonathan Becker

Has completed the following CITI Program course:

Social and Behavioral Responsible Conduct of Research (Curriculum Group)
Social and Behavioral Responsible Conduct of Research (Course Learner Group)
1 - RCR (Stage)

Under requirements set by:

University of Saint Francis

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wd1b8961c-d010-4c7f-9240-c417308ec100-35171135

CITI PROGRAM

Completion Date 01-Mar-2020
Expiration Date 01-Mar-2023
Record ID 35171134

This is to certify that:

Jonathan Becker

Has completed the following CITI Program course:

Social & Behavioral Research - Basic/Refresher (Curriculum Group)
Social & Behavioral Research (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

University of Saint Francis

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wad86e2c1-6cb4-483d-a587-01f1ee00cb1d-35171134

CITI PROGRAM

Completion Date 03-Feb-2020
Expiration Date 02-Feb-2023
Record ID 35171137

This is to certify that:

Jonathan Becker

Has completed the following CITI Program course:

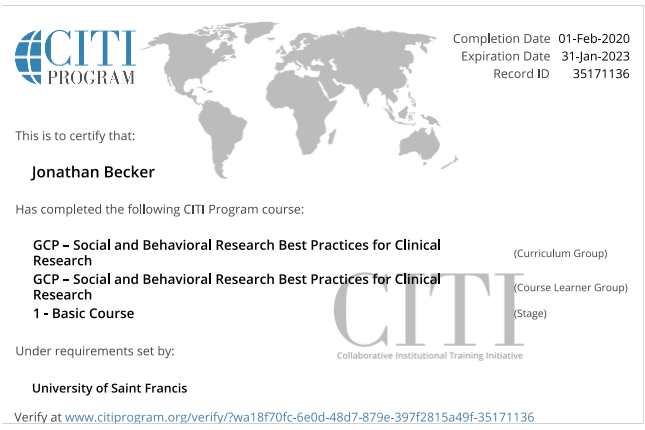
Public Health Research (Curriculum Group)
Public Health Research (Course Learner Group)
1 - Basic (Stage)

Under requirements set by:

University of Saint Francis

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w8fd2e23a-35be-4a12-8e8d-0deba0f01896-35171137



CITI PROGRAM

Completion Date 01-Feb-2020
Expiration Date 31-Jan-2023
Record ID 35171136

This is to certify that:

Jonathan Becker

Has completed the following CITI Program course:

GCP – Social and Behavioral Research Best Practices for Clinical Research (Curriculum Group)
GCP – Social and Behavioral Research Best Practices for Clinical Research (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

University of Saint Francis

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wa18f70fc-6e0d-48d7-879e-397f2815a49f-35171136

Appendix H

Demographic Questionnaire

1. What is your current age?
    a.
2. What gender were you assigned at birth?
    a. Male
    b. Female
3. What is your race?
    a. African American
    b. Asian American
    c. Caucasian/Hispanic
    d. Caucasian/Non-Hispanic
    e. Native American
    f. Other
4. How many years of Nurse Anesthesia training have you completed?
    a. 0-1
    b. 1-2
    c. 2-3
5. Does your university have a full semester course in regional anesthesia, including hands on ultrasound technique in a lab setting?
    a. Yes
    b. No

6. If you answered “No” to the above question, are you provided with didactic instruction including hands on ultrasound technique in a lab setting?
    a. Yes
    b. No
7. Have you sought alternative regional anesthesia instruction from a professional workshop such as Maverick, Twin Oaks, NYSORA, other?
    a. Yes
    b. No
8. Have you started clinical rotations?
    a. Yes
    b. No
9. If you answered “Yes” to the above question, how many hours of clinical rotations have you completed?
    a. 0-50
    b. 50-200
    c. 200-300
    d. 300+

10. How many peripheral nerve blocks have you successfully completed independently during clinical rotations?
    a. 0-10
    b. 11-20
    c. 21-30
    d. 31-50
    e. 51-70
    f. 70+

Appendix I

Pretest/Posttest

1. What is the correct identification of ultrasound guided anatomy, moving from medial to lateral, for a peripheral nerve block of the femoral nerve in the adductor canal?
    a. Vein, Nerve, Artery
    b. Artery, Vein, Nerve
    c. Nerve ,Vein, Artery
    d. Vein, Artery, Nerve

2. Which of the following are signs/symptoms of Local Anesthetic Systemic Toxicity (LAST)? Select 4 responses.
    a. Tinnitus
    b. Hypertension
    c. Circumoral numbness
    d. Blurred Vision
    e. Hypotension
    f. Bradycardia
3. What is the proper procedure to utilize when injecting local anesthetic for a peripheral nerve block?
    a. Administer a test dose of 3ml followed by depositing the rest of the local anesthetic, targeting specific nerves that are being blocked.

   b. Negative blood aspiration, followed by 5ml incremental injection with negative blood aspirations in between each injection, until total dose desired is given around targeted nerve.
   c. Inject 10ml then redirect and inject an additional 10ml. Check for negative blood aspiration before injection.

4. For a total knee arthroplasty, what block would be the best choice to allow for early mobilization?
   a. Popliteal
   b. Quadratus Lumborum
   c. Brachial Plexus
   d. Adductor Canal
5. What is the correct treatment for a patient experiencing LAST?
   a. 20% lipid emulsion; administer 150ml over 2-3 minutes
   b. 20% lipid emulsion; administer 1.5ml/kg <70kg or 100ml > 70kg over 2-3 minutes
   c. ECMO
   d. Dantrolene; administer 2.5mg/kg up to 10mg/kg
6. What block is best performed for a total shoulder arthroplasty?
   a. Supraclavicular Block
   b. Axillary Block
   c. Interscalene Block
   d. Infraclavicular Block

7. Which one of the following blocks would you NOT expect to see a motor response when using a combined nerve stimulator and ultrasound technique?
    a. Femoral Block
    b. Interscalene Block
    c. Adductor Canal Block
    d. Pectoral Block
    e. Popliteal Block
8. Which of the following is a common occurrence when administering an Interscalene block?
    a. Horners syndrome
    b. Puncturing a lung
    c. Phrenic nerve paralysis
    d. Intra arterial injection
9. In which patient would you consider not doing an Interscalene block?
    a. Severe chronic obstructive pulmonary disease
    b. Chronic heart failure
    c. Chronic kidney disease
    d. Coronary artery disease

10. What is the most appropriate way to achieve maximum reimbursement for a peripheral nerve block placement?
    a. Bill as a part of anesthesia services
    b. Bill as an intraoperative procedure performed during anesthesia services
    c. Bill as a primary anesthetic
    d. Bill as post-operative pain management and bill separately for intraoperative anesthesia services provided

Appendix J

Peripheral Nerve Blockade Check-off

Tasks to be completed	Performs	Does Not Perform
1. Interscalene brachial plexus block external anatomy identification. Verbalizes nerves blocked and indications for block use. a. Placement of probe between clavicle and scalene muscles b. Moves probe cephalad to level of cricoid cartilage C6 c. Interscalene groove d. Shoulder surgeries		
2. Interscalene brachial plexus block ultrasound anatomy identification. Describe proper needle direction and injection point. a. Subclavian artery b. C5, C6, C7 lined up in stop light fashion between middle scalene muscle and anterior scalene muscle c. Interscalene groove d. Pleura e. First rib f. Lateral to medial needle approach g. Discussion of injecting medication below C7 first h. Followed by injection between C5 and C6		
3. Adductor Canal block external anatomy identification. Verbalizes nerves blocked and indications for block use. a. Knee surgery (preserves motor function) b. Middle 2/3 of lateral thigh		
4. Adductor Canal block ultrasound anatomy identification. Vein, Artery, Nerve Describe proper needle direction and insertion point. a. Sartorius b. Vastus medialis c. Adductor magnus/longus d. Femoral artery e. Femoral vein f. Saphenous nerve in femoral triangle at adductor canal g. Saphenous nerve lateral to femoral artery h. Lateral to medial inject inside nerve sheath of saphenous nerve in adductor canal		
5. Demonstrates proficiency in ultrasound scanning techniques		

Score: P/F

*****Student will be re-tested if any of the critical safety steps are omitted

Appendix K

Workshop Survey

1. What is your confidence level in the use of regional anesthesia?
    a. Very Low
    b. Low
    c. Neutral
    d. High
    e. Very High
2. How likely are you to use regional anesthesia in your daily practice?
    a. Very unlikely
    b. Unlikely
    c. Neutral
    d. Likely
    e. Very Likely
3. What is your confidence level in your ability to identify when to use regional nerve blocks?
    a. Very Low
    b. Low
    c. Neutral
    d. High
    e. Very High

4. Do you feel the use of regional anesthesia is relevant to your practice?
    a. Strongly Disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly Agree
5. What regional nerve blocks do you feel are most relevant your anesthesia practice?
    a. Add a comment here:

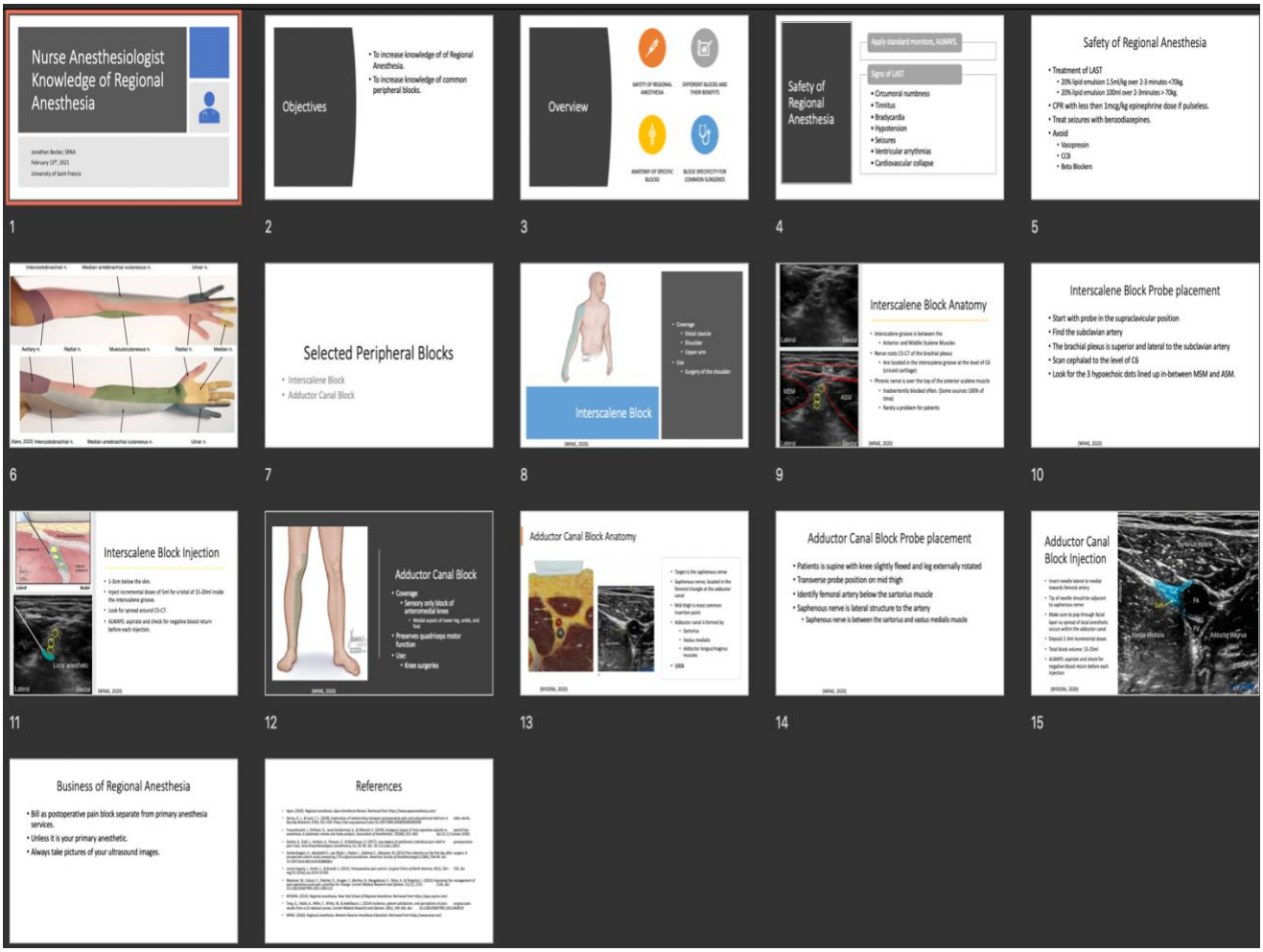
    _____

6. How likely are you to attend a commercial regional anesthesia workshop in the future, such as Maverick, NYSORA, Twin Oaks? Why or why not?
    a. Very unlikely
    b. Unlikely
    c. Neutral
    d. Likely
    e. Very Likely
    f. Add a comment here:

    _____

Appendix L

Implementation PowerPoint



Appendix M

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre test score	83.0000	10	10.59350	3.34996
	Post test score	93.0000	10	8.23273	2.60342

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre test score & Post test score	10	.650	.042

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre test score - Post test score	-10.00000	8.16497	2.58199	-15.84086	-4.15914	-3.873	9	.004

Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate	95% Confidence Interval Lower	Upper
Pair 1	Pre test score - Post test score	Cohen's d	8.16497	-1.225	-2.040	-.373
		Hedges' correction	8.52608	-1.173	-1.953	-.357

a. The denominator used in estimating the effect sizes.
Cohen's d uses the sample standard deviation of the mean difference.
Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.