

## **Methodology**

### **Project Design**

This project's design is non-experimental and will assess student participants' knowledge before and after the implementation of educational neuraxial skills videos. A pre-test consisting of ten multiple-choice questions will be given to assess student knowledge before watching the videos provided. The same questions will be repeated in the post-test to assess the knowledge gained. Eight additional Likert-style survey questions and two open-ended questions will be given on the post-test to assess participant satisfaction. The educational videos will be created after a thorough review of current evidence-based practices and then made available to students on their online Learning Management System.

### **Objectives**

This project aims to enhance Student Registered Nurse Anesthetist (SRNA) knowledge of neuraxial anesthesia, leading to greater preparedness for skill performance in the clinical setting. This will be done by conducting a thorough review of the literature to find the best evidence to revise neuraxial procedural rubrics and create video educational tools. Project leaders will create the video tools with the help of a professional videographer and laboratory equipment supplied by the university. A baseline assessment of knowledge will be obtained by conducting a pre-test. The graduate students enrolled in an introductory anesthesia course at a midwestern United States university will receive the videos via an online learning platform. Additionally, participating students will be provided with a guided hands-on laboratory experience. A post-test assessment will be given to determine the success of the learning intervention. Successful implementation will be demonstrated by a 15% or greater increase in test scores and 80% or more of participants rating the videos as helpful or very helpful. Findings

will then be presented to nurse anesthesia educators for possible incorporation into future courses.

### **Participants**

The study participants will be derived from an introductory nurse anesthesia course at a mid-sized university in the Midwestern United States. Students in this cohort will be enrolled in the Orientation to Nurse Anesthesia course in the Spring 2023 semester. The number of participants is estimated to be 32. All students participating in the study will be given access to educational videos on neuraxial anesthesia.

### **Consideration of Human Subjects**

After review by the Institutional Review Board at the university, an exemption was granted for this project. This study will not include personal identifiers; all evaluations will be anonymous. There are no significant foreseeable risks or discomforts to study participants besides time inconvenience. The time required to complete the pre-test and post-test, watch the videos, and take the survey could exceed one hour of the participant's time; however, this is thought to be offset by the knowledge the participant has the potential to gain from the videos.

### **Stakeholders**

The primary stakeholder for this project is a university professor who is the lead instructor for the introduction to anesthesia course. Project leaders will collaborate with university professors to ensure that the project meets the needs of the facility in which it is being conducted.

In addition, the students enrolled in the introduction to anesthesia course and participating in the project are considered stakeholders. By participating in the study, students will receive high-quality educational videos on neuraxial anesthesia that will aid in their

understanding of the topic. These videos will provide students with supplemental educational resources they can utilize throughout the remainder of the nurse anesthesia program.

### **Evaluation Method**

Participants will be asked to complete a pre-test, post-test, and a brief survey of their thoughts and perceptions of the project and associated interventions. The pre-test will be a short 10-question quiz on the procedural steps of neuraxial anesthesia and will be given prior to any in-class instruction on this topic. This pre-test will assess the participant's baseline knowledge of neuraxial anesthesia. Once all subjects have taken the pre-test, the mean score will be calculated. After the pre-test is administered, subjects will be provided with educational videos on neuraxial anesthesia. These videos will not only demonstrate how to perform spinal and epidural anesthesia but also discuss other important aspects of the procedure, such as indications and contraindications, risks and benefits, etc. Videos will closely follow the rubrics for the associated skills test-outs in the introduction to anesthesia course, with particular emphasis on "critical points" of the procedure. After students have had ample opportunity to view the videos, the post-test will be administered. The post-test will include the same ten questions as the pre-test and will aim to show an increase in knowledge following the intervention. Once all subjects have taken the post-test, the mean score will be calculated and compared to the pre-test average. Lastly, participants will be given a survey to better understand their perceptions on this additional mode of learning as well as evaluate the perceived benefit or lack thereof of the project overall. The results of the tests and survey will be reported in the executive summary.

### **Associated Costs**

Costs associated with the project will include the utilization of a professional videographer to ensure that the educational videos are of high quality. The estimated cost for

filming and editing the videos is \$600. The American Association of Nurse Anesthesiology awarded this project grant funding. All other necessary parts of the project, including location, equipment, and apparel, will be provided by the University's School of Nursing free of charge.

### Neuraxial Anesthesia Test

1. What actions should be taken prior to placing a spinal anesthetic? Select 2 that apply.
  - a. Complete thorough chart review
  - b. Obtain baseline 12-lead EKG
  - c. Administer fluid bolus
  - d. Induce general anesthesia
  
2. Select an appropriate vertebral interspace for spinal anesthetic placement.
  - a. T10-T11
  - b. L1-L2
  - c. L3-L4
  - d. L5-S1
  
3. Infection prevention techniques used for placement of all neuraxial anesthetics include all the following except:
  - a. Prophylactic antibiotics administered 30 minutes prior to procedure start
  - b. Handwashing
  - c. Face mask, head covering, sterile draping, and sterile gloves
  - d. Use of Iodine antiseptic solution allowing for 2-minute dry time
  
4. Motor blockade is \_\_\_\_\_ interspace(s) \_\_\_\_\_ sensory blockade.
  - a. 1, below
  - b. 2, above
  - c. 2, below
  - d. 2-6, below
  
5. Sympathetic blockade is \_\_\_\_\_ interspace(s) \_\_\_\_\_ sensory blockade.
  - a. 1, above
  - b. 4, below
  - c. 5, below
  - d. 2-6, above
  
6. What is the local anesthetic used for epidural test dose?
  - a. 1% lidocaine with 1:100,000 epinephrine
  - b. 1% lidocaine with 1:200,000 epinephrine
  - c. 1.5% lidocaine with 1:100,000 epinephrine
  - d. 1.5% lidocaine with 1:200,000 epinephrine

7. Sudden onset of tachycardia and hypertension after administration of epidural test dose is most likely due to:
  - a. Intraneural injection
  - b. Intravascular injection
  - c. Pain of the injection
  - d. Intrathecal injection
  
8. True or False: Once loss of resistance is achieved, the epidural needle should be advanced 1 cm into the epidural space to ensure proper placement.
  
9. If the epidural needle is advanced 5cm to reach loss of resistance, the epidural catheter should be threaded to \_\_\_\_\_ cm at the skin before securement.
  - a. 5 cm
  - b. 7 cm
  - c. 10 cm
  - d. 13 cm
  
10. True or False: The spinal dose in a CSE is injected after the epidural catheter is threaded.

### Project Evaluation

Please use the following grading scale to answer the statements below:

Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
1	2	3	4	5

The supplemental videos were easy to access.

1                      2                      3                      4                      5

The supplemental videos were easy to understand.

1                      2                      3                      4                      5

The supplemental videos aided in my understanding of neuraxial anesthesia.

1                      2                      3                      4                      5

The supplemental videos aided in performing neuraxial anesthesia.

1                      2                      3                      4                      5

I would prefer the incorporation of video learning for future topics covered in class.

1                      2                      3                      4                      5

The skills rubrics were easy to understand.

1                      2                      3                      4                      5

The information taught in the videos aligned with the information listed on the skills rubric.

1                      2                      3                      4                      5

Having peers teach in lab aided in my educational experience.

1                      2                      3                      4                      5

What was most helpful?

What could be improved upon?