Spring 4-30-2023

Standardized Handoffs For Anesthesia Students

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by

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Doctor of Nursing Practice Final Scholarly Project

In Partial Fulfilment of the Requirements for the Degree

Doctor of Nursing Practice

Otterbein University – OhioHealth Grant Medical Center Nurse Anesthesia Program

2022

DNP Final Scholarly Project Team:

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Executive Summary

Communication between healthcare providers is an essential aspect of caring for patients. Effective communication is vital during the patient handoff process. The patient handoff process involves exchanging patient's medical information between a provider currently caring for the patient and the provider assuming care of the patient. If the information exchanged during the handoff process is inaccurate or essential information is omitted, that could potentially lead to harmful consequences for the patient. Currently, no standardized handoff tool exists for student registered nurse anesthesia students (SRNAs) in clinical practicum at the local level one trauma center. The lack of a standardized handoff tool at this facility suggests an increased likelihood of communication errors during the handoff process. The purpose of this quality improvement project is to implement a standardized handoff tool called the AneSBAR tool that SRNA students can utilize in their practice to ensure proper and effective handoffs in the post-anesthesia care unit (PACU) and the intensive care unit (ICU). The inclusion criteria for the project are 2nd or 3rd-year SRNA students currently enrolled full-time in the local Certified Registered Nurse Anesthetist (CRNA) program. The quality improvement project will follow a Plan-Do-Study-Act (PDSA) model. Both qualitative and quantitative data will be collected to determine the impact of the standardized handoff tool. Data collected from surveys and simulations will determine if the PDSA cycle needs repeated or if the QI measure is ready for implementation.

Introduction

Clinical Problem

Adequate exchange of information is an essential aspect of healthcare used to ensure safe, efficient, and timely patient care. Effective communication is vital during the patient handoff process. The patient handoff process involves exchanging a patient's medical information between a provider currently caring for the patient and the provider assuming care of the patient. The exchange of care between two providers continues to be scrutinized for its lack of conformity, miscommunication, and omissions of information. Inferior communication and lack of consistency during the handoff process can result in minor to severe harm to patients (The Joint Commission [TJC], 2017).

In 2006, The Joint Commission (TJC) created a national safety goal that made the handoff process a requirement. Additionally, in 2012, TJC stated that poor communication was the most common cause of sentinel events in the health care setting (TJC, 2017). The Council on Accreditation of Nurse Anesthesia Educational Programs (COA) stated SRNAs must transfer care of patients to other providers in a manner that assures patient safety and continuity of care (Council on Accreditation [COA], 2021). Standardized handoffs are the superior method of communication; however, no standardized postoperative handoffs exist within the local anesthesia program or the level one trauma center for PACU and ICU nurses. As previously mentioned, the clinical problem of ineffective communication during the handoff process can have detrimental effects on our patients, in addition to staggering financial repercussions for hospital systems (TJC, 2017).

Significance of Problem to Nursing

The patient handoff process is a fundamental aspect of the nursing profession that ensures consistent and safe patient care when done correctly. SRNAs take part in multiple handoffs a day where any outside factors could hamper the exchange of information between providers. A 2016 study by TJC (2017), estimated communication failures were responsible, at least in part for 30% of malpractice claims that resulted in 1,774 deaths and $1.7 billion in malpractice. TJC also reported that 70% of the 3,000 sentinel events analyzed from 1995-2004 were caused by communication problems, with half occurring during handoffs (TJC, 2017). Using these reports, TJC created annual national safety goals, which led to the requirement of standardized handoffs in 2006 (Finkelman, 2018, TJC, 2017).

Patient advocacy and safety are the cornerstone of the nursing profession. When nurses do not receive the appropriate information required to care for patients, they are likely to commit avoidable errors and compromise the safety of their patients. Evidence shows communication errors between patient care teams in the postoperative report have led to malpractice and patient safety errors that result in patient harm (TJC, 2017). To reduce the possibility of potential errors, modifications to the postoperative handoff process needs to be implemented into the SRNAs clinical practicum at the local level one trauma center.

Clinical Needs Assessment

Currently, no standardized handoff process exists at the local level I trauma center between anesthesia providers and PACU/ICU nursing staff. As previously mentioned, the lack of a standardized handoff process suggests an increased likelihood of communication errors are occurring at this facility. Communication errors not only jeopardize patient safety, but also have a led to severe financial repercussions for hospital facilities. Several evidence-based handoff

tools have been proven to effectively improve the handoff process, thus reducing the number of avoidable communication errors. This quality improvement project focused on determining if the AneSBAR handoff tool can decrease the likelihood of potential errors, omissions, and increase the perception of patient safety amongst the SRNAs using the tool (Vladinov et al., 2021). Data gathered by the project team leaders regarding the effectiveness of the handoff tool will be shared with the local CRNA program director and assistant program director. These results will determine if the quality improvement measure is worth implementing into SRNAs practice during postoperative handoffs to nurses.

Problem Statement

COA guidelines mandate the safe and effective transfer of care between SRNAs and other healthcare providers. In addition, the COA states standardized handoffs are safer than the current ad-lib process (COA, 2021). Currently, no standardized handoff tool exists in the local CRNA program nor the level 1 trauma center's Anesthesia department despite TJC's recommendation to comply with national safety goals (TJC, 2017). Lack of a standardized handoff tool between Anesthesia providers and nursing staff increases the likelihood of miscommunication during the handoff process (Miller, 2021). Literature shows that implementing a standardized handoff process could increase patient safety, decrease omissions of information, and most importantly, decrease the likelihood of sentinel events and death, saving CRNAs and hospital organizations money (TJC, 2017).

Review of the Literature

PICO Question and Search Terms

The literature review was conducted to evaluate the impact of standardized handoffs (tools, checklists, mnemonics) ability to reduce errors and omissions in a handoff, outside factors

affecting a handoff report, barriers associated with improvements, and the perception of safety amongst those utilizing handoffs techniques. A PICO question was created to guide key search terms to find the most substantial evidence. Melnyk & Fineout-Overhold (2005) stated the components of a PICO are population, intervention, comparison, and outcome. The PICO question served as the framework to analyze and address a problem. The population focused on SRNAs in the local CRNA program. The intervention was an evidence-based structured handoff tool for postoperative reports in the PACU/ICU. The intervention was compared to current practice of ad-lib verbal communication with no current standardization between providers. The outcome of interest was communication errors, omissions of important information, and perceived safety amongst providers during the postoperative handoff process.

PICO

In student registered nurse anesthetists (SRNA) (**P**), would the implementation of a structured handoff tool in the ICU/PACU setting (**I)** compared to current ad-lib verbal communication (**C**), affect communication errors, omissions, and perceived patient safety during the postoperative handoff process (**O**).

Literature Search

The project team leaders completed a thorough literature search using key search terms derived from the PICO question. The search included databases of published articles from CINAHL (EBSCO) and the American Assassination of Nurse Anesthesiology (AANA). keywords include *SRNA or student nurse anesthetists, CRNA or certified registered nurse anesthetists, structured handoff, postoperative report, communication errors, and patient safety.* This method resulted in 1,189 articles in CINAHL. The Boolean operator “and” was also used to further narrow the search results. To help facilitate a smaller scope of articles, the search was

narrowed to full-text articles, peer-reviewed articles, and articles written from 2016 to 2021, resulting in 647 articles. The search was further refined by filtering English-only articles, which resulted in 26 articles. AANA's database was not as intricate, with fewer search option criteria to narrow down and resulted in 62 articles or documents. The search was further filtered to only include published articles in the AANA journal since 2015, which narrowed the search to 17 articles.

Synthesis of the Literature

After identifying the need for a standardized handoff tool, the project team leaders searched the literature to provide evidence of the problem and its effects on practice. The articles selected during the literature search highlight different aspects of ineffective communication between anesthesia providers and nurses in the postoperative setting. Each article identified that the absence of a standardized handoff checklist increases the likelihood of communication errors and omission of pertinent patient information.

Standardized Handoffs in Post-Anesthesia Care Unit

The Joint Commission's national safety goal to implement standardized handoffs, does not specify which handoff tool to use (TJC, 2017). Many different types of standardized handoffs exist within the literature; however, they were all created to help decrease errors and omissions or enhance the handoff process. Rosenthal et al. (2017), conducted a systematic review of standardized handoffs. The project team leaders concluded that all handoff tools improved the care process and using them can improve various patient outcomes (Rosenthal et al., 2017). The authors also found no specific type of standardized handoff (checklist, script or templet, or mnemonic) worked better than the other, however, each type of standardized handoff led to improvement of patient-related outcomes. Additional factors such as length of stay, preventing

medical errors, and mortality resulted in variable results, with some designs showing improvements (Rosenthal et al., 2017). A systematic review conducted by Bukoh and Siah (2020), with nine different articles determined that structured handoff formats effectively reduce omissions of information, inaccuracies, and documentation errors.

Lambert and Adams (2018) created a Written Handoff Anesthesia Tool (WHAT) for CRNAs and PACU nurses. The WHAT handoff tool is a standardized tool that features eight discussion points vital to the patient handoff process. The authors performed an analysis of the handoff process before and after the implementation of the WHAT handoff tool. If the sender omitted important patient information during the handoff process, it was considered defective. The study showed implementing the WHAT standardized handoff tool reduced the defective rate of handoffs between CRNAs and RNs to 36.4% compared to the pre-intervention defective rate of 60.7% (Lambert & Adams, 2018). The authors also found a statistically significant increase in staff satisfaction with the handoff tool, adequacy of the handoff process, and reduction of omissions of information (Lambert & Adams, 2018).

According to Canale (2018), more than 70% of healthcare errors occur because of poor communication. This statistic led the author to perform a quality improvement project intended to "implement a standardized handoff to improve the quality and continuity of the transfer of information, perceptions of patient safety, and healthcare worker satisfaction" (p. 137). An evidence-based tool referred to as the Wright's PATIENT handoff tool was provided to 20 CRNA's to implement during the postoperative handoff process. Pre- and post-intervention data revealed: "statistically significant improvements in the quality and continuity of the transfer of information, perception of patient safety, and healthcare worker satisfaction" (Canale, 2018, p. 137).

Vladinov et al. (2021), published a pilot study intended to observe the impact of a standardized handoff tool on a SRNAs ability to perform an accurate postoperative handoff. The researchers created the handoff tool using the situation, background, assessment, and recommendation (SBAR) model as its foundation with anesthesia-focused components that led to the final AneSBAR handoff rubric used in the study. Nine anesthesia professionals determined the AneSBAR handoff rubric was a reliable assessment tool to evaluate an SRNAs ability to give an accurate and concise handoff. SRNAs then used the AneSBAR handoff rubric as a handoff tool in a simulated handoff scenario. This study concluded that the AneSBAR rubric was a reliable and valid tool and could be used to "teach and assess in simulation to assure complete and accurate transfer of patient information" (Vladinov et al., 2021, p. 106). The AneSBAR tool garnered significant attention from the DNP project team leaders because it was created for SRNAs to help facilitate an accurate and complete transfer of patient information.

Important Aspects of a Standardized Handoff

Gibney et al. (2017), found that out of 82 anesthesia providers, 53 (64.6%) did not use a standardize handoff. The 82 providers in this study were then given a list of 18 components deemed essential through previous literature reviews and had the providers list how often they provided these components during their handoff report. The 18 components included their American Society of Anesthesiologist (ASA) class, airway type, airway difficulty, allergies, analgesia, antibiotics, antiemetics, anesthetic type, invasive lines, intake/output, patient medical history, patient surgical history, position, procedure, neuromuscular blockade status, surgeon, ventilatory status, and vital signs. The authors found that of those items, the most essential components in order were airway difficulty, procedure, medical history, IV, vital signs, airway type, allergies, anesthetic, and analgesia.

Reine et al. (2021), observed the frequency of items reported during handoff and found that of the 18 components deemed essential in Gibney and colleagues' study, only seven of those items were consistently stated during handoff (90 percent or greater).

Of the 18 reported essential components of a handoff, the AneSBAR tool includes 16 of the 18 components. The rubric also includes an introduction of self, the patient, and any recommendations to help foster better patient outcomes during the recovery period (Vladinov et al., 2021). The comprehensive inclusion of essential components of the handoff process and relevance to SRNAs were the deciding factors that led the DNP project team leaders to select the AneSBAR tool as the handoff tool to implement.

Intensive Care Unit Handoffs

A study done in the ICU used a quality improvement project to evaluate the implementation of their "time-out" handoff process from the surgical and anesthesia teams. The authors reported that nurses received a handoff report 20% to 60% of the time, 46% to 74% felt satisfied with handoff, and 89% expressed improved their perception of communication with the anesthesia team (Talley et al., 2019). A similar checklist-style structured handoff was implemented into the ICU of a large academic teaching center and found significant improvement in satisfaction with the handover, communication, and improved effectiveness (Turner et al., 2018). Another study conducted by Fabila et al. (2016), reported that using a SBAR form for anesthesia handoff provided more helpful information, improved recipients' perception of information clarity and sufficiency, reduced omissions of information, and created fewer inconsistencies.

Segall et al. (2016), assessed how the postoperative handoff process between anesthesia providers and the ICU staff can be improved. The study analyzed a total of 49 handoffs between

anesthesia providers and the ICU staff, which revealed several technical and communication flaws throughout the patient handoff process. As a result, the researchers implemented several interventions into the postoperative handoff process, including the required use of a standardized handoff tool. After implementation of the standardized handoff tool, the researchers observed an additional 49 handoffs. Results revealed that using a standardized handoff tool reduced the omission of patient information, decreased the overall time of the handoff process, and significantly improved satisfaction among anesthesia providers and the ICU nursing staff.

Krimminger et al. (2018) identified that postoperative handoff between anesthesia providers and the ICU nursing staff created a more favorable potential for errors and miscommunication due to the high-stress nature of the intensive care setting. As a result, the authors created a standardized handoff process and communication template to improve the handoff process. The research team observed 38 handoffs during the pre-intervention and post-intervention phases of the study. Results showed that implementing the standardized handoff process and communication template led to fewer interruptions, fewer handoff process errors, and fewer information-sharing errors during the postoperative handoff process (Krimminger et al., 2018).

A 2016 randomized control study and a 2019 non-randomized control study observed the effects of implementing an electronic handoff tool to facilitate and improve postoperative communication between anesthesia and ICU nursing staff. Benton et al. (2019) revealed that using IPASS electronic handoff tool improved provider satisfaction and reduced the perceived amount of communication errors during the postoperative handoff process. Shah et al. (2016) also determined that using a standardized electronic handoff tool reduced the omission of critical data and incomplete information compared to ad-lib reports recalled from the anesthesia

provider's memory. However, it is interesting to note that the studies that used an electronic standardized handoff tool did not seem to have as significant an impact on the omission of information and communication errors as the studies that used a physical standardized handoff tool.

Factors Affecting Handoff

The handoff process is complex and requires attention from multiple healthcare professionals and careful planning exchange information safely and effectively. Multiple studies researched the different aspects that are important to the handoff process. A 2018 study in which a qualitative exploratory focus group composed of different anesthesia providers and nurses identified five factors that affected the quality of the handover, "timing and concurrency conflicts, handover structure, patient conditions, individual characteristics of clinicians involved, and team composition" (Reine et al., 2018, p. 668). The study also mentioned careful planning and communication as significant contributors to the handoff's success. Rose and Newman (2016) conducted a literature review and used a social-ecological model focusing on intrapersonal, interpersonal, organizational environment, and organizational policy factors. The authors found an average of 55% of pertinent patient information was omitted during the postoperative handoff when the anesthesia providers did not use a handoff communication tool (Rose & Newman, 2016). Lowe and George-Gay (2017) created a study that focused on four conditions (distractions, production pressure, noninteractive or 1-way communication, and handoffs that occurred at inappropriate times) and created handoff scores from 58 simulated handoffs. They found that while distractions and interruptions occurred the most (81% of the cases), noninteractive communication (21% of cases) was the most significant predictor of poor handoff scores.

Simulation

The goal in designing a simulation is to recreate reality in an organized and safe way (Broussard et al., 2009). Simulation use in medicine dates back to the 18th century, when clay mannequins were built in Italy as birthing simulations and educate students and midwives (Jones et al., 2015).

The aviation industry revolutionized the use of simulations through scientific-based methods that became the blueprint of simulations. Edwin Link, in 1929, invented the first flight simulator that was able to reproduce a flying sensation and controls that caught the attention of the Army, which then mandated simulation as a part of pilots' education (Jones et al., 2015). Creating a safe environment to practice high-risk scenarios caught the attention of the medical world, and it began working on creating medical simulations and tools. In the 1960s, a toy manufacturer designed Resusci-Anne that enabled healthcare providers to practice airway obstruction management, and then an internal spring was placed into the chest to practice CPR. As time passed, the creation of more advanced mannequins helped propel the use of simulation team-based learning in medicine. Recently, simulations went virtual, allowing repeated practice and exposure to rare events with an increased convenience of working from a computer.

Due to the nature of healthcare and its tendency of situations to change abruptly, simulations became an increasingly sought-after tool to help educate workers and improve safety (Broussard et al., 2009). The authors mentioned a few other factors that increased the use of simulations, including a nursing educator shortage and clinical site shortage, which forced universities to adapt teaching styles and invest in technology to use more creative methods for education. A simulation is a valuable tool used throughout all medical fields to aid visual learners, create muscle memory, and safely practice life-threatening and rare emergencies before

experiencing them in clinical practice. Another vital aspect of simulation-based learning was the ability to make mistakes allowing those involved in the simulation to learn and move forward without patient harm. Other benefits included are the ability to discuss constructive feedback after the simulation with the learner. Educators can typically watch the simulation unfold, take notes, and provide real-time or post-simulation feedback.

While simulations have many advantages, they are not perfect, and some challenges accompany them. Expense, time, technical support, and space for simulation labs and storage all pose challenges to universities and health care facilities (Broussard et al., 2009). A 2020 study in which a panel of experts in their medical field determined barriers in simulation and found that capital investment, psychological resistance, difficulty in integrating curriculum, and lack of trained staffing as the main contributors (Rishipathak et al., 2020). Despite these difficulties, the authors concluded the benefits far outweighed the limitations.

Effectiveness of simulation

The use of simulations in education and medicine is a topic that deserves attention. A 2019 meta-analysis of 33 studies that looked at the impact of simulation of life-threatening clinical scenarios in nursing students. La Cerra et al. (2019), discovered simulations significantly increased knowledge and performance compared to other teaching methods. The authors also looked at self-confidence, self-efficacy, and satisfaction and could not find significant differences. This study included undergrad and postgraduate nursing students, primarily located in the United States, and therefore can directly correlate to simulation's effectiveness to increase knowledge and performance using simulation for the quality improvement project.

Simulations for Student Registered Nurse Anesthetists

Multiple studies evaluated the effectiveness of simulations related explicitly to anesthesia students and found success in evaluation, high risk, low yield scenarios, and knowledge and skill development and retention. Vladinov and his colleagues (2021), were one of the studies that used simulation in their design implementation to determine the effectiveness of the AneSBAR handoff. The authors found the AneSBAR tool to be reliable and valid. However, some limitations they faced during simulation-based learning methods were the Hawthorne effect and smaller sample size.

Another simulation-based study looked at handoffs for anesthesia residents and students in an ICU patient. The authors found simulations gave the students a better understanding of a handoff's essential elements and the debriefing portion enhanced their medical knowledge and further improved their handoff skills (Krishnan et al., 2020). Due to the positive feedback received, the research team was able to help establish simulation-based training for their CA-1 residents within their first few months of training. The limitations mentioned in their study were finding time for learners, learners staying in character, and the ability to determine the effect on the clinical setting (Krishnan et al., 2020). A critical finding was the difference in scores between the different level providers (CA-3, CA-1, SRNA). The authors mentioned how the CA-3's finished with significantly higher scores helping the researchers determine that early implementation in an anesthesia student's education benefits the learner.

Simulation Style

Simulations now take place in various styles, such as actual human interaction simulations, mannequin simulations, or virtual simulations. A study focused on using mannequin versus virtual simulation in SRNA students found second-year students could recognize intra-op Myocardial infarction (MI) in mannequin-based simulations faster than virtual simulations,

however, third-year students showed no difference in recognition time (Erlinger et al., 2019). The authors concluded that both simulation styles were effective, but those students with less clinical experience might benefit more from in-person mannequin simulations. These findings are significant because the results of these studies allow the project team leaders of the DNP project to use different simulation styles without fear of decreasing the effectiveness of the study.

Scaffolding the Project

Theoretical Framework

The project utilized the Model for Improvement framework, which uses the Plan-Do-Study-Act (PDSA) cycle and three focus questions to help guide improvement in organizations (Langley et al., 2009). “The three focus questions include: (1) What are we trying to accomplish, (2) How will we know that a change is an improvement, and (3) What changes can we make that will result in improvement?” (Moran et al., 2020, p. 142).

This quality improvement (QI) project used four steps while utilizing the PDSA cycle. Those steps were a planning phase, testing the QI measure on a small scale, analyzing the data, studying the results, and modifying the QI measure based on the results (Institute for Healthcare Improvement [IHI], 2021). The PDSA cycle is a valuable tool to implement during QI projects. The PDSA cycle allows project teams to continually assess and modify their QI measure until it is successful. The PDSA cycle encourages project teams to implement QI projects on a small scale to ensure their effectiveness before implementing them on a larger scale, such as hospital-wide policy. Overall, the most important concept pertaining to the PDSA cycle its use of a continuous loop that repeats itself until the process improvement is adequate to the project team’s standards. Continual assessment allows the project team to modify and implement QI measures continuously until the QI measure is proven successful.

The “plan” phase, defined as a time to describe the plan for change, identify objectives and predictions, and consider who, what, when, where, and why (Finkelman, 2018). During the planning phase, the project team leaders first identify the QI projects overall objectives and make predictions of what will happen and why. Next, the project team leader develops guidelines to determine if the QI measure was successful or needed to be modified. The guidelines developed in this phase of the PDSA cycle need to be clear and concise as they serve as the benchmarks to whether the QI measure is a success or failure (IHI, 2021).

After the planning phase of the PDSA cycle is complete, the second stage is the “do” portion in which the project is pilot tested for implementation into a smaller group (Finkelman, 2018). Throughout the “do” phase of the PDSA cycle, the project team leader must continually evaluate for unexpected observations and problems so that they are addressed in the future (IHI, 2021).

The third stage is the “study” portion of the model, where data is collected, analyzed, and compared to the previous predictions (Finkelman, 2018). If the predictions were off, then critical thinking occurs to determine what happened and why. It is essential for the projection team leaders to summarize and reflect on new information learned during the implementation of the QI measure (IHI, 2021).

Lastly, the “act” phase of the PDSA cycle involved taking what was learned during the previous phases and adjusting the QI measure to improve areas of dysfunction.
Once the team makes proper adjustments to the QI measure, the cycle starts from the beginning of the planning phase until the QI measure is determined to be successful (IHI, 2021). Appendix A provides a visual aid of the PDSA cycle developed by the Institute for Healthcare Improvement.

The PDSA cycle ensures effective outcomes for QI studies. The design was chosen because previous QI studies involving implementing a standardized handoff tool demonstrated successful implementation. For instance, a 2017 QI study was conducted to determine if using a standardized handoff tool improved medical residents' ability to complete the handoff process. The PDSA cycle was used this study and largely contributed to its success. The PDSA cycle is repeated a total of three times throughout the study or until the project team leaders determined the QI measure was adequate and ready to be implemented on a larger scale (Fryman et al., 2017). Another QI study published in 2021 used the PDSA cycle to implement a standardized handoff among nursing staff in the hospital setting. The use of the PDSA was instrumental in helping the project team leader implement a standardized handoff that led to the prevention of healthcare-related errors during the handoff process (Miller, 2021).

Purpose

The overall goal of the DNP project is to implement a standardized handoff tool that SRNAs can utilize during the postoperative handoff process with the PACU and ICU nursing staff. SRNAs implement their new evidence-based handoff tool into clinical practice to improve patient outcomes and decrease the omission of information (Rosenthal et al., 2017). SRNAs who implement standardized handoffs into their practice follow The Joint Commission's National Safety Goal to improve all handoffs through standardization (TJC, 2017). The project's additional quality improvement objective is to improve the perception of patient safety and health worker satisfaction with the new handoff process.

To achieve this project's goal, several objectives were identified following the PDSA cycle to ensure the success of the DNP project. The first objective of the DNP project was developing a plan that served as a foundation or blueprint. The most effective evidence-based

standardized handoff tool was identified through an extensive literature search, and the best process to implement these tools into practice was outlined. The project's main objective was to implement the AneSBAR standardized handoff into clinical practice for SRNAs through education and simulation-based scenario training. A study conducted by Krishnan et al. (2020), determined that using a simulated environment was a successful method to implement a standardized handoff tool with anesthesia learners. Those who participated in the study stated that using a simulated environment was effective in "filling medical knowledge gaps and improving their handoff skills" (p. 2).

The next objective is to determine if the handoff tool caused improvement in the handoff process. The project team leaders in the study collected baseline data using the AneSBAR tool (Appendix C) to observe the current handoff process used by SRNAs in clinical practice. Appendix C is an evidence-based handoff tool and observation rubric previously determined to be reliable and valid (Vladinov et al., 2021). Appendix D is the quantitative data collection device to rate each handoff and compare pre- and post-handoff data. The study included a baseline survey of SRNAs to gather data on current practice norms, satisfaction with current processes, effectiveness, and perception of patient safety for the current handoff process. A post-simulation survey will be completed to compare the results and determine if the change improved. SRNAs who utilized the AneSBAR standardized handoff tool in clinical practice complied with The Joint Commissions' national safety goal of implementing a standardized handoff into practice, achieving the goal for the project.

The third and final objective of the DNP project is observation of the data collected from the implementation phase and refining the intervention to address areas in need of improvement.

These objectives are performed continually until the overall project goal is completed in compliance with the PDSA cycle framework's model.

Methods

Project Design

This quality improvement project will use a Plan-Do-Study-Act method in which both quantitative and qualitative data will be collected. A quality improvement project is a continuous, structured, and systematic data-driven process to help implement immediate improvements that exceed expectations of health delivery (Finkelman, 2018). Quantitative data will be obtained using the AneSBAR tool (Appendix C) during a pre-intervention observation simulation. The same tool will be used during the simulated scenario to observe and rate each SRNA, and data from both scenarios are compared. Qualitative data will be obtained with pre- and post-simulation survey questions (Appendix D) from the selected sample.

During the "plan" portion of the project, team leaders will determine if the AneSBAR handoff tool is preferred over other evidenced-based tools defined throughout the literature review. The AnesSBAR handoff uses the situation, background, assessment, and recommendation (SBAR) format as its foundation. The SBAR format is the most widely used handoff structure in the hospital setting, which could ease the burden of change (Institute for Healthcare Improvement, 2015). The AneSBAR tool was chosen over other handoff tools because it encompasses factors deemed essential by several peer reviewed studies, including Reine et al. (2021) and Vladinov et al. (2021). Another reason included the recommendation of TeamSTEPPS. TeamSTEPPS is an evidenced-based framework that is widely used and adopted into healthcare models to improve team performance and communication (Agency for Healthcare Research and Quality, 2013). TeamSTEPPS recommends the use of the SBAR format

for handoff and that an opportunity to ask questions, clarify, and confirm information be afforded to the receiver. In addition, a meeting with the local CRNA school program director helped determine the proper tool to choose based on experience and comfort with the tool. SRNAs are the ideal population to include in the study due to the lack of clinical experience and exposure to the handoff process. One qualitative research article mentions how inexperienced nurses or nurse anesthetists pose increased risks due to the inability to recognize missing information (Reine et al., 2018). Giving inexperienced SRNAs a handoff tool to use could reduce or even eliminate this concern. Reine et al. (2021) found that handovers of vitally stable and comfortable patients had more omissions in the report than those of higher acuity. Due to these concerns the DNP project team leaders determined the AneSBAR handoff would be pertinent to use for both ICU and PACU handoff. The "plan" portion of the project is estimated to take six months to implement.

The second phase of the PDSA cycle involves the implementation of the quality improvement change. To help determine the percent of change post-implementation, the DNP project leaders will start by observing SRNAs handoffs in both the PACU and ICU. This gives the team preliminary data on the percentage of omissions that occur in SRNAs current practice. For the second stage of the project the project team leaders will design a simulated based environment to implement the change in handoff practices. A presurvey (Appendix D) will be sent out one week before the simulation through email to gather preliminary data of the SRNAs. SRNAs will sign up in one-hour block scheduled appointment times that will include five students at a time. Upon arrival to the simulation suite, the first portion of the simulation will involve two separate scenarios, one ICU handoff and one PACU handoff. The students will be presented with the scenarios documented in appendix E. The first scenario will include a routine

orthopedic surgery situation where the SRNA must give report to a PACU nurse. The Second scenario includes a situation where the patient remains intubated after a coronary graft artery bypass surgery and the SRNA gives report to an ICU nurse. The SRNAs will give their current ad-lib handoff routine in the first two simulated scenarios. During this time, the project team leaders will evaluate the students using the AneSBAR handoff rubric. Upon completion of the simulated scenarios, a 15-minute education session will occur using the AneSBAR tool. The participants will receive a small pocket card printout of the AneSBAR handoff tool to refer to as a reference guide during report. Finally, each student will receive the same two scenarios, one PACU handoff and one ICU handoff, while the project team leaders again evaluate their handoffs using the rubric. The pre-simulation and post-simulation handoff scores will be totaled and displayed graphically to appreciate the difference. Two weeks after the simulation, a post-intervention survey will be sent out to all participants. The survey was modified from Canale's study and is shown in Appendix D.

Target Population, Sample, and Setting

The target population of interest is SRNAs in years two and three of their doctoral studies. By including students from both cohorts, the project team leaders will determine how experience impacts the implementation of handoffs. Knowing what level of experience is impacted the most will provide project team leaders with feedback of when it is most beneficial to implement the handoff tool into the program's curriculum. A convenience sample of 30 local SRNAs will be included in the study. Inclusion criterion for the project will be an adult, registered nurse, and a 2nd or 3rd-year SRNA currently enrolled full-time in the local CRNA program and rotating through the local level one trauma center. The setting is a large, urban 434-bed level one trauma center with a modern simulation laboratory in the Midwest.

Outcome Analysis Plan

Instruments & Data Collection

Two tools utilized for this project will include the AneSBAR form (Appendix C) and the pre-survey and post-survey (Appendix D).

The AneSBAR tool was created in 2021 to assess SRNAs' reporting skills using the SBAR handoff format (Vladinov et al., 2021). The layout of the AneSBAR rubric is a structured checklist that allows the observer to quickly identify if the SRNAs discussed vital points of the handoff process during the simulated handoff. The layout of the AneSBAR tool features four critical sections of the handoff process: identify, situation & background, assessment, and recommendation. Once the SRNA mentions the discussion point in their simulated handoff, the observer checks a box next to each discussion point within the four sections.

Vladinov et al. (2021) analyzed results from a 2015 study by Foronda et al. to determine the ISBAR Interprofessional Communication Rubric (IICR) was both reliable and valid in measuring communication between nurse-to-physician communication during simulations. After obtaining permission, the authors modified the tool to better fit SRNA students. They created a simulation in which nine individuals (CRNAs and anesthesiologists) used the tool to rate SRNAs giving handoffs. Of the 17 items, 14 were valid and rated 0.88 or higher on the I-CVI scale. To determine the reliability of raters, the team used a Spearman's rank correlation and confirmed reliability. These two tools created the final AneSBAR rubric that this study used.

Two project team leaders will oversee both data collection periods to obtain consistency throughout the data collection process. An inter-rater reliability test will be computed during the observational period to determine reliability between the two raters. After both raters completed the first 20 observations, and an inter-rater reliability test will be run using a percentage

agreement. A percentage agreement consists of counting the total number of ratings that the two raters identified as the same number and dividing by the total number of ratings all together to get the percentage of time the raters agreed (Glen, 2016). A 75% agreement is generally acceptable and is the cutoff rate for a reliable inter-rater observation. If the project leaders are reliable, the remaining pre-intervention observations will be collected independently to maximize the data collection process. The project team leaders will both rate the SRNAs during the simulation. Another inter-rater reliability test will be run after completion of the simulations to improve the data collection process and confirm reliability between the raters for accurate results.

The AneSBAR tool will collect preliminary data through direct observation of SRNAs giving postoperative reports in the PACU/ICU and during the simulation. The first section listed on the handoff rubric is the "identify" portion of the handoff process. In this section, the SRNA must first introduce themselves and provide the surgeon's name performing the case. Next, the SRNA is required to state the patient's full name, age, and date of birth. If each of these three discussion points are mentioned by the SRNA, they received three points in the "identify" section. The following section on the AneSBAR rubric is the "situation & background" portion. This section required the SRNA to first identify the procedure and why the patient is having the procedure done. After identifying the procedure, the SRNA must discuss the patient's past medical history, most recent labs, and pertinent diagnostic testing. This section also features a perioperative-specific discussion point intended for anesthesia-to-anesthesia handoff in the perioperative phase only. To receive credit for the peri-anesthesia discussion point, the SRNA must mention the patient's weight, allergies, pre-operative medications, type and screen, blood

availability, antibiotic, and if the patient is on a beta-blocker. If the SRNA discussed these discussion points, they will receive an additional three points on the AneSBAR rubric.

The next section of the AneSBAR rubric is the "assessment" portion of the handoff process. In this section, the SRNA must discuss the type of anesthetic, induction process, and type of airway used in the case. Next, the SRNA must identify the intravenous access of the patient, the types of intra-operative medications used (muscle relaxants, opioids, and vasoactive drugs), intake and output, and any problems that occurred during the case. If the SRNA adequately discusses each of these points in the assessment portion of the AneSBAR rubric, they will receive a total of five points. During the "recommendation" phase of the handoff process, the SRNA must identify any potential concerns, pending laboratory results, the need for redosing antibiotics, and any other medications that needed administered. Finally, the SRNA must discuss the emergence plan, including any antiemetics and pain control modalities used throughout the case. If the SRNA discusses both criteria in the recommendation portion of the AneSBAR rubric, they will receive two points. The DNP project team leaders will add the total points earned in all four sections and submit it for data analysis.

Vladinov et al. (2021) determined a passing score for the AneSBAR tool was nine out of thirteen possible points. The project team leaders plan to use the same criteria to determine if the handoff is successful or unsuccessful and would display the percentage of successful handoffs in a graph to display pre-intervention and post-intervention. The graph would help display a visual difference in second-year versus third-year SRNA students. Interestingly, a 2019 study determined that clinical scenarios created the most significant impact on SRNAs early on in their education instead of near the end of their respective program (Erlinger et al., 2019). If this is determined to be true for the DNP project, implementing the standardized handoff tool should

occur during the first year of the Nurse Anesthesia program. If the data determines that the AneSBAR did not change during the study portion of the PDSA model, then the project team leaders will restart the cycle or abandon the AneSBAR tool and create a plan for a new standardized handoff tool.

The pre-simulation and post-simulation survey (Appendix D*)* that will be used in this project was slightly modified from Canale's study to say, "Student Registered Nurse Anesthetist" rather than "Certified Registered Nurse Anesthetist". Canale's preintervention survey is a Likert-type questionnaire that consists of a categorical question, five multiple-choice, and three open-ended questions (Canale, 2018). The post-intervention survey used consists of three categorical questions, two demographic, five multiple-choice, and three open-ended questions. Canale's study modified the questionnaires from a similar study done by Wright (2013). Suzanne Wright is a CRNA with a Ph.D. and is the director of the Center for Research in Human Simulation for the Nurse Anesthesia school at Virginia Commonwealth University (Wright, 2013). When creating her surveys, the author used an expert panel of two anesthesia providers, one administrator, and two academicians, increasing the reliability and validity of the questions. Canale's survey was chosen over Wright's because it used fewer open-ended questions, more multiple-choice questions, and more questions that involved the use of the standardized handoff tool rather than questions involving the creation of the tool's components.

The pre-survey and post-survey will allow the project team leaders to compare the data to help determine if the change was significant and why. The surveys will provide the project team with qualitative data about various demographics of the SRNAs that may alter the results of the study. The qualitative data from the Likert-type and multiple-choice questions will be analyzed and placed into graphics for a pre-intervention and post-intervention comparison. A thematic

analysis of the open-ended questions will be used to gather qualitative data. Thematic analysis is a qualitative method to define data using coding to determine themes in the responses to help understand the underlying messages (Caulfield, 2020). The project team leaders will read over the results and use descriptive text and themes to help relay the qualitative data to the audience.

Sustainment Recommendations

If the quality improvement project is determined to improve the handoff process and implemented into practice, then sustainment methods need to be implemented. The program director needs to update the SRNA program handbook to include proper use of the AneSBAR handoff tool in the PACU/ICU during the SRNAs postoperative report.

A sustainment philosophy that is already utilized by the project's intended clinical site would also be used in this project. The philosphy is the "Kaizen system". Kaizen originated as a business model for continuous process improvement where the employees are actively engaged in improving specific outcome measures (VORNE, 2021). Kaizen uses the basic principles of lean production, which states, "work systems must continuously evolve towards a better performance by addressing the weakness of previous designs" (Morell-Santandreu et al., 2020, p. 3). One of Kaizen's main concepts involved making small changes every day to improve continuously. The philosophy behind Kaizen was to build a work culture where all employees can suggest improvements in the company and eventually becomes a natural way of thinking (VORNE, 2021). Kaizen relies on the same PDSA framework utilized for this project and allows for continuous modification of the plan until a sustainable outcome is achieved. Due to governmental agencies pushing sustainable development and healthcare companies need to deliver quality care, more healthcare companies implemented this philosophy into their hospitals.

The level I trauma center where the SRNAs participate in clinical practice utilizes the Kaizen system on each unit throughout all healthcare disciplines. Employees from each unit can pick a variable that they want to improve upon. This variable is measured daily over a predetermined timeframe. The data collected daily through staff involvement, random audits, or direct observation, and that information is posted on a graph. Each day the variable is deemed unsuccessful, the problem is investigated, and a process improvement plan created to avoid making the same mistake again. This process is maintained for as long as the measurable needs to sustain the change. The final process of the Kaizen system focuses on sustainment. Once a variable is deemed successfully implemented, a new variable is placed on the board. A second board, created with random audits of previous variables, took place each day to sustain the change from the previous measurement. If the previous measurable failed, then it is be placed back onto the daily measurement board.

Another critical aspect of the Kaizen plan is the Gemba walk. Higher-level management and leaders of the company walk to each unit daily and are presented the current measurables at a board that gives a graphical representation of the progress of each measurable. The idea behind the Gemba walk was to allow leadership to visualize change at the unit level, collaborate with each unit to sustain the change, and encourage support, communication, and trust between lower-level employees (Quibell, 2015).

In this project, to sustain the change, SRNAs using the AneSBAR tool will be an outcome measurement posted on the PACU and ICU daily process improvement board. The nurses in the units will check a box at the end of their shift asking if the SRNA followed the prompt when they gave their postoperative handoff. The AneSBAR algorithm will be posted on the paper for visualization and recognition from the receiving nurses. Those papers will be

collected by the nurses in charge of updating the process improvement board for the day. If the measurable is deemed incorrect or omitted and SRNAs were not using the handoff process, the program director would be contacted. SRNAs would then be contacted to find out why the handoff was not completed correctly. Any barriers to implementation would be identified and addressed during the evaluation process with the help of the program director and project design team. During this time, the project's team leaders will periodically join the Gemba walk and would discuss any problems with implementation and sustainment. Once the measurable reaches a sustained mark, the measurable would be placed onto the sustainment board for random audits. The project team leaders would take random direct observations of SRNA student handoffs to confirm proper handoffs. During this time, the project team leaders would rate the SRNAs using the AneSBAR tool to gather post-implementation data to help determine if a change occurred. Real-time coaching and feedback would be given during the report and corrective action utilized if a consistent problem is identified with any student.

Limitations

A limitation to the project is data collection will occur in a simulated environment rather than an actual clinical situation. While Krishnan et al. (2020) determined simulation was an effective way to emulate anesthesia handoff between anesthesia students, simulation cannot replace the experience gained in the clinical setting when actual patients are involved. Another potential limitation is the Hawthorne effect. The Hawthorne effect describes the phenome of individuals changing their behavior because of the attention they receive from researchers rather than from independent variables (Cherry, 2020). The project team leaders will be observing the SRNAs throughout all data collection methods making the Hawthorne effect a significant concern.

Some potential limitations to the project were identified during the literature search. Unfortunately, there are only a few systematic reviews on implementing an anesthesia handoff. None show any direct correlation to improved safety, which is the biggest reason TJC implemented the national safety goal. Several studies suggested their handoff tool format was superior to other tools, without proof of consistent data. The SBAR format is currently the typical handoff method used throughout the institution, therefore the AneSBAR is utilized in the project due to its SBAR format. However, the AneSBAR study is used in only one study that determined reliability and validity rather than direct implementation into clinical practice. Another limitation to the AneSBAR study by Vladinov et al. (2021), was the small sample size of SRNA students used and the ability to generalize the results to CRNAs in clinical practice. Further data is needed to determine if the implementation of the AneSBAR tool leads to improved handoffs in clinical practice.

Barriers to the project will include the difficulty coordinating schedules between the simulation lab times and SRNA students' clinical times. Careful planning and communication will be needed to accommodate the number of students needed to participate in the study. The project team leaders need to be diligent in making a schedule that can accommodate the SRNAs, even in their busiest clinical rotations. Another barrier to the completion of the project will be the time constraint needed for the project team leaders to collect data while also completing their clinical schedules. Finally, buy-in for participation and completion of surveys for SRNAs could limit the sample size and skew the data. Access to multiple SRNA cohorts and universities could help facilitate a greater sample size. However, data collection and coordination of several SRNAs at once could become even more difficult.

Project Timeline & Budget

Timeline

The project team leaders are planning one cycle of the PDSA framework to take six months to complete and will begin in December of 2022 and last through May of 2023. Starting in December of 2022, the second-year SRNAs will gain some experience in anesthesia before observing their handoff routine. The first three months would consist of the collection of observational pre-data. This process takes place through observation of SRNAs during postoperative reports in the PACU and the ICU. Based on the AneSBAR rubric, the project team leaders will observe and gather quantitative data to compare the simulated handoff scores post-implementation. The fourth month requires reservation of the local simulation lab over three different days to help accommodate the SRNA's schedules amongst the two cohorts. The fifth and sixth months will include gathering data and preparing to disseminate the results to stakeholders related to the project. The results gathered in the data collection phase will determine if the DNP project is ready for implementation on a larger scale or if the PDSA cycle needs repeating. If the PDSA cycle needs repeating, the intervention should be modified using quantitative and qualitative data collected during the first implementation phase. Upon successful implementation, data should show that use of the AneSBAR tool should help to decrease errors and omissions, ease the handoff process, improve handoffs, and improve patient safety. Once it is determined that the DNP project met the project objectives, a final scholarly report will be created along with a poster presentation in partial fulfillment of the student's Doctor of Nursing Practice degree requirement. The final report is submitted to the university for published archiving no later than May 2023.

Budget

The project cost will be under $200 because the local CRNA programs allow students access to the simulation lab for free. The designated funds purchased paper, ink, pens, and a poster template to present the findings. The project team leaders will fund the project, contact critical stakeholders, conduct observations, plan, implement simulation days, collect data from surveys and AneSBAR tools, and disseminate information to the local program director. Project team leaders will use university-derived emails to send a recruitment email to all junior and senior students in the CRNA program. The pre- and post-surveys will be emailed to participants to avoid the cost of printing and save time. The cost of the sustainment method used for this project will be only ink and paper for nurses to mark if SRNAs completed the handoff. The clinical workplace currently uses whiteboards, paper, and markers for their Kaizen measurable graphs. Therefore, it will not cost any extra money to utilize the process that was already in place.

Conclusion and Recommendations

The handoff process is a fundamental skill that SRNAs must master to ensure the care of their patients is safely transferred to other healthcare providers. After an extensive literature search, the project team leaders determined that the implementation of a standardized handoff tool is the best method to ensure an accurate and concise handoff. In addition, the use of the AneSBAR handoff tool was found to be the superior handoff tool to use for SRNAs due to its previous success in helping students improve their handoff abilities in simulated clinical scenarios. It is the project team leader's recommendation that the local CRNA program implement the AneSBAR handoff tool into the curriculum to ensure that their students are giving an accurate handoff in both the PACU and ICU settings. It is also recommended that additional

studies of SRNAs using the AneSBAR in the clinical setting are performed to evaluate the effectiveness of the handoff tool in real life scenarios.

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Appendix A

Literature Table

Citation (Author, Year, Title, etc…)	Conceptual Framework (Theoretical basis for study)	Design/ Method	Sample/Setting (Number, Characteristics, Exclusions, Criteria, Attrition, etc…)	Major Variables; definitions (Independent variables; Dependent variables)	Outcome Measurement (What scales used – reliability information – alphas)	Data Analysis (What stats used?)	Findings (Statistical findings or qualitative findings)	Level of Evidence Level =	Quality of Evidence Strength Limits Risks Feasibility
Standardized handoffs:									
Article I: The Effectiveness of Standardized Handoff Tool Interventions During Inter- and Intra-Facility Care transitions on Patient-Related Outcomes: A systematic Review									
Rosenthal, J. L., Doiron, R., Haynes, S. C., Daniels, B., & Li, S. T. T. (2017). The Effectiveness Of Standardized handoff tool interventions during inter and intra facility care transitions on patient-related outcomes: A systematic review. *American Journal of Medical Quality*, *33*(2), 193 206. https://doi.org/10.1177/1062860617708244	**n/a**	Systematic review from 2000 to May 2016 on standardized handoff interventions with patient related outcomes	Studies were evaluated for eligibility for inclusion by at least 2 hours in a 2-stage process: 14 articles met inclusion with 5 patient related outcomes identified: clinical complications, length of stay, processes of care, adverse events and errors, and family satisfaction	**Dependent: patient outcomes** **Independent: Handoffs for standardized handoffs**	Patient related outcomes described in a chart	Quality scores with Standard deviation	Interventions consistently improved process of care, did not affect mortality. Studies included showed improvements in various patient related outcomes however these findings were not consistent across the studies Using pneumonic had the highest reductions in errors and preventable adverse events but didn't have significant effect	**I**	The study was too broad and needed to look at more specifics rather than general handoffs Pneumonic could be the best choice for standardized handoff
Article 2: A systematic review on the structured handover interventions between nurses in improving patient safety outcomes									
Bukoh, M., & Siah, C. (2020). A Systematic review on the structured handover interventions between nurses in improving patient safety outcomes. *Journal of Nursing Management*, *28*(3), 744 755. https://doi.org/10.1111/jonm.12936	**Berlo's model of communication**	Systematic review	9 studies total of randomized controlled studies or quasi-experimental studies with a quality appraisal – studies that focused on one unit were excluded, focused on acute inpatient wards	**Independent variable: Structured patient Handoff** **Dependent variable: Patient complications, medication errors and general adverse events**	Mean, standard deviation, total, difference IV, random 95% on a scatterplot to compute difference in outcome measures across the studies	Cochrane Collaboration used to perform a statistical analysis with inverse variance methods, means, standard deviations, assessment of heterogeneity with Cochran's Q and I test	Structured handovers compared to non – exerted little effect on improving patient complications and p 0.07 meaning the difference could be assumed to be other factors but large among of heterogeneity was found among the studies Improving number of medication errors – structure intervention has exerted little effect on medication errors however the P=0.02 indicated that structured handovers were found to significantly reduce patient complications in the inpatient wards	**I**	Results were not statistically significant, was focused on acute inpatient handoffs rather than anesthesia, however is highest level of evidence and one of the few systematic review that shows important trends in the data – heterogeneity was high due to the differed natures of the studies, limited sample sizes, and various clinical settings

							but limited number of papers Effectiveness of structured handovers in improving number of general adverse events found that it had little effect and p=0.06 meaning difference assumed to be due to other factors Reducing errors – handovers have moderate effect with p=0.1 which means could be assumed to be other factors		
Article 3: Improving Postoperative Handoff in a Surgical Intensive Care Unit									
Talley, D. A., Dunlap, E., Silverman, D., Katzer, S., Huffines, M., Dove, C., Anders, M., Galvagno, S. M., & Tisherman, S. A. (2019). Improving postoperative handoff in a surgical intensive care unit. *Critical Care Nurse*, *39*(5), e13–e21. https://doi.org/10.4037/ccn2019523	**N/A**	Plan-Do-Study-Act Evidence based project – quasi experimental design - Pre and post intervention surveys assessing reporting procedures of surgical and anesthesia teams, prioritization of activities upon patient returns and nursing years of experience. – post survey questions added – nurses' perception of the impact of the intervention on the reporting process	SICU in the University of Maryland Medical Center – Pre intervention – 68/74 nurses and nurse practitioner completed survey; post survey 68/86 nurses and nurse practitioners completed survey. Voluntary responses.	Independent: perception of "time-out" surgical handoff Dependent: SICU unit, nurses working	P values used	Microsoft excel used to do Likert scales, demographic questions, then a dichotomous variable comparing the preintervention and post using the x^2 Test for unpaired data	P <0.001 – statistically significant increase found after intervention in the percentage of responder reporting receiving handoff from surgical team on patients return from OR (20% to 60%) – also higher satisfaction with surgical handoff (46% vs 74% p=.001), no statistical significance in report received from anesthesia team (78% vs 88% p=.11) or percentage reporting being satisfied with anesthesia team handoff (88% vs 91% p=.59)	**VI**	Only looking at perception of nurses – doesn't look at improved outcomes for patient. Strength of buy-ins from each group hard to achieve, nursing staff experience can vary, direct observation was not used
Article 4: improving Communication between Surgery and Critical Care Teams: Beyond The Handover									
Turner, C. J., Haas, B., Lee, C., Brar, S., Detsky, M. E., & Munshi, L. (2018). Improving Communication between surgery and critical care teams: Beyond the handover. *American Journal of Critical Care*, *27*(5), 392 397. https://doi.org/10.4037/ajcc2018114	**n/a**	Pre-post intervention survey study evaluating the use of a 2-part communication intervention between surgery and ICU teams focused on postoperative handover and daily communication	N=112 – included ICU physicians, nurses, allied health professional and physicians on the surgical team – wanted 50% of staff Conducted in single center large academic-teaching center with large general surgery and surgical oncology program in a medical-surgical ICU	Independent: handover checklist completed postoperatively on arrival to ICU and 5 item communication tools completed daily by the surgical team Dependent: Unit, nurses, surgery team, physicians	P values .001	Median and interquartile rangers used to describe Likert response data, Mann-Whitney test, thematic analysis, and GraphPad Prism used for statistical analysis	Significant improvement found in satisfaction with postoperative handover, communication to ICU, and daily communication between teams, improved effectiveness of communication for initiating DVT prophylaxis, starting feeding, and satisfaction of understanding the plan Improved communication on dressing management, disposition, and overall perceived improvement in patient safety was not statistically significant	**III**	Specifically related to surgery itself, less with anesthesia. Lack of randomization, poor response rates and high variability in response rates

Article 5: Improving postoperative handover from anaethetists to non-anaesthetists in a children's intensive care unit: the receiver's perception									
Fabila, T.Hee, H., Sultana, R., Assam, P., Kiew, A., & Chan, Y. (2016). Improving Postoperative Handover From anesthetists to non anesthetists in a children's intensive care unit: The receiver's perception. *Singapore Medical Journal*, *57*(05), 242 253. https://doi.org/10.11622/smedj.2016090	N/a	Prospective interventional study in a CICU at an 830-bed hospital for women and children in Singapore. Pre-intervention pilot evaluation of handover protocol, intervention, implementation. Post-intervention – evaluation of the new handover process	52 CICU personnel participated in the study – pre and post survey – all ICCU PIs and RNs approached to participate, voluntary and responses were kept confidential	Independent: Effectiveness of PETS handoff in smooth and complete transfer of information, duration of transfer Dependent: CICU, anesthesia, RN's,	5-point Likert scale reclassified into 3 points, 4-point SBAR dichotomized, frequencies and proportions used to describe data	Fischer's exact test to evaluate current and new handover with 95% confidence intervals. Statistical significance set at 5%, two-sided tests, data analyzed using R software	No significant difference in the perceived handover duration between pre and post intervention, increase in nurses who indicated handover was sufficient (95.5% vs 31.8%), information was more concise and clear, less nurses had to look elsewhere for information (38.6%) – significantly more recipients indicated that the new SBAR form was the most important handover tool and provided more useful information, improvement in information sufficiency and clarity, reduction of omission errors, and fewer inconsistencies in patient descriptions	**VI**	Significant plan, would need systemic approach – accepting protocol, large study, non-validated metrics for observation,
Article 6: Operating Room-to-ICU Patient Handovers: A multidisciplinary Human-Centered Design Approach									
Segall, N., Bonifacio, A. S., Barbeito, A., Schroeder, R. A., Perfect, S. R., Wright, M. C., Emery, J. D., Atkins, B., Taekman, J. M., & Mark, J. B. (2016). Operating room-to-icu patient handovers: A multidisciplinary human-centered design approach. *The Joint Commission Journal on Quality and Patient Safety*, *42*(9), 400–AP5. https://doi.org/10.1016/s1553-7250(16)42081-7	**N/A**	Ethnographic methods were used by way of a series of observations, surveys, interviews, and focus groups.	Inclusion criteria included high-risk patients recovering from cardiac, thoracic, neuro-logic, general, or vascular operations.	The two major variables used in this study consisted of 49 observed handovers before the new handover process was initiated and 49 observed handovers after the implementation of the new handover process.	Outcomes were evaluated by way of a series of observations, surveys, interviews, and focus groups pre and post-handover implementation.	Statistics were gathered using two-sample *t*-test to compare pre- and postintervention handovers. Statistics for the two sample t-test were collected using the information transfer score (primary measure), team behaviors score, workload score, duration, interruptions, and task performance.	Quantitative data was gathered via information transfer score and scores improved significantly. In addition, handover duration was not prolonged by the new process. And participants were more satisfied with the new handover method.	Level-4 Single correlation / observational study	The quality of evidence for this article is questionable for bias due to the observational nature of the data results. However, the feasibility of this study for my DNP is great and one I will likely use.
Article 7: Improved Anesthesia Handoff After Implementation of the Written Handoff Anesthesia Tool (WHAT)									
Lambert, L., & Adams, J. (2018). Improved Anesthesia handoff after Implementation of the Written Handoff Anesthesia Tool (WHAT). *AANA*, *86*(5).		Quantitative preintervention-postintervention design using quality improvement project to test the WHAT Using Anesthesia Handoff Communication survey and the Targeted Solutions Tool to be completed by CRNA, PACU RN before and after implemented of the WHAT WHAT – standardized by 8	350 bed hospital in southeastern US, 22 CRNA and 15 PACU RNs participated	Independent: WHAT handoff tool CRNA, PACU nurses, survey	during priori power analysis showed survey needed at least 13 CRNA and 13 PACU RN for statical power of 0.95 (alpha = .05, SD =7) for minimal sample size GraphPad prism	TST program calculated defective rate of handoff communication using proportional analysis – then analyzed using Fisher exact to test for the CRNA-to-CRNA data GraphPad prism was also used with Mann-Whitney test and AHC survey data	Anesthesia handoff communication survey: Statically significant increase in satisfaction with handoff communication the use of the WHAT for both groups Targeted solutions tool defective rate: baseline of 60.7% of CRNA to CRNA to PACU handoff were rated as defective – after WHAT implementation only 36.4% rated defective. Statistical improvement for	**VI**	Limited by sample of convenience, use of one facility, participants awareness,

		categories listed to be communicated					both CRNA and RN perception of adequacy of handoff		
Article 8: A Multidisciplinary QI Initiative to Improve OR-ICU Handovers									
Krimminger, D., Sona, C., Thomas-Horton, E., & Schallom, M. (2018). A multidisciplinary qi initiative to improve or–icu handovers. *AJN, American Journal of Nursing*, *118*(2), 48–59. https://doi.org/10.1097/01.naj.0000530248.45711.60	**N/A**	Quality improvement	The sample included the handover process for 38 cardiothoracic surgery patients transitioning from the OR to the ICU. No exclusion criteria were identified.	The independent variable in this study is the handover process before and after the new handover process is implemented. The Dependent variable is the evaluation survey used to assess the effects of the new handover tool.	Outcomes were evaluated using provider satisfaction surveys before and after the implementation of the new handover tool. In addition, interruptions during report handover errors and information sharing errors were evaluated as well.	Statistics included an analysis of the number of interruptions during report handover errors and information sharing errors before and after the implementation of the new handover tool.	Quantitative analysis showed significant decrease in interruptions during report, fewer handover process errors and fewer information-sharing errors**.**	Level-4 Single correlation / observational study	The quantitative and qualitative methods used in this study seem feasible to incorporate in my DNP project.
Article 9: Usability Assessment of an Electronic Handoff Tool to Facilitate and Improve Postoperative Communication Between Anesthesia and Intensive Care Unit Staff									
Benton, S., Hueckel, R. M., Taicher, B., & Muckler, V. C. (2019). Usability assessment of an electronic handoff tool to facilitate and improve postoperative communication between anesthesia and intensive care unit staff. *CIN: Computers, Informatics, Nursing*, *38*(10), 500–507. https://doi.org/10.1097/cin.0000000000000563	**N/A**	Quality improvement	The sample size of this study consisted of 38 total handoffs observed in the neurological ICU setting. The handover process was observed between anesthesia staff and the ICU nurses/nurse practitioners.	The variables used in this study were the of surveys completed by the nurses and nurse practitioners before and after the implementation of the IPASS handover tool. The control in this study were the hospital staff used during the evaluation process.	Outcomes were measured using a survey of that evaluated the nurses and nurse practitioner's perception of the handoff process before and after the implementation IPASS handover tool. The reliability of the data collected is questionable because the results of the survey were all subjective information based on the opinions of the RNs and NPs.	Statistics were derived from the percentage of change identified in the before and after survey results.	The quantitative results of the study revealed that the implementation of the IPASS handover tool unproved the accuracy and made the handover process more user friendly. As a result, more providers were willing to use the electronic handover tool and the handover process showed an overall improvement.	Level-2 Nonrandomized controlled trials	The quality of evidence in this study shows great promise that I can implement some of its ideas into my DNP project. The proven success of the IPASS handover tool shows that when handover tools are user friendly and easy to use, the more likely that providers will adapt new processes. This encourages me to select a handover tool that will be easy for providers to adapt.

Article 10: An electronic handoff tool to facilitate transfer of care from anesthesia to nursing in intensive care units									
Shah, A. C., Oh, D. C., Xue, A. H., Lang, J. D., & Nair, B. G. (2016). An electronic handoff tool to facilitate transfer of care from anesthesia to nursing in intensive care units. *Health Informatics Journal*, *25*(1), 3–16. https://doi.org/10.1177/1460458216681180	**N/A**	Quality improvement/needs assessment	The sample for this study included 26 total handoffs. 12 handoffs were evaluated using no handoff tool and 14 handoffs were evaluated using a handoff tool. Inclusion criteria consisted of intubated patients transferring from the OR to the ICU. No exclusion criteria were identified.	The independent variable in this study was the control groups that did or did not implement the new handoff process. The Dependent variable is the evaluation criteria used to assess the effects of the new handover tool.	Outcomes were measured using a OR to ICU handover audit tool that assessed the success of the handover in a number of ways.	A 2-sample t-test and Mann–Whitney U test were used to evaluate and summarize the findings of the ICU handover audit tool	Qualitative and quantitative data were used in the evaluation of this study by way of surveys and the data gathered from the handover audit tool.	Level -2 Randomized controlled trial	The feasibility of this study seems unlikely because it would require the implementation of a handover sheet into the charting system. In addition, the evaluation tools used for the study did not seem reliable as they were largely based on observations.
Article 11: Implementation of a Standardized Handoff of Anesthetized Patients									
Canale, M. (2018). Implementation of a standardized handoff of anesthetized patients. *AANA Journal*, *86*(2).	**N/a**	Evidence based project Pre-survey, post-survey design to determine if standardized handoff improves quality and continuity, perception of patient safety, and healthcare worker satisfaction	Twenty CRNA's selected with nonprobability snowball sampling to create a handoff using teamSTEPPS. PATIENT pneumonic was used for two weeks	Independent variable: standardized handoff Dependent variable: CRNA giving report	P values used	T test analysis and paired t test for Likert-type scores Descriptive analysis Thematic analysis of open-ended questions	Statistically significant improvements in quality and continuity of transfer of information, perception of patient safety, and healthcare worker satisfaction	**VI**	Patient safety is hard to measure but perception of patient safety is easier to improve however this study is very similar to the project I plan on implementing
Article 12: AneSBAR Handoff Rubric for Nurse Anesthesia Students									
Vladinov, G. M., Foronda, C. L., Gomez, N. A., Wunder, L., Budhathoki, C., & Gonzalez, J. E. (2021). Anesbar handoff rubric for nurse anesthesia students. *Clinical Simulation in Nursing*, *50*, 102–106. https://doi.org/10.1016/j.ecns.2020.09.004	**N/A**	AneSBAR rubric to develop to assess students on their SBAR reporting skills using simulation	34 CRNA students participated in the simulation with 9 anesthesia professionals surveyed on validity of rubric	**Dependent variable: AneSBAR** **Intendent: CRNA student**	Validity was ranked using I-CVI scale with items above 0.88 acceptable	Spearman's rank correlation of 0.793 indicating $p < .001$ Kappa correlation	Out of 17 items, 13 were rated 0.88 or higher on I-CVI scale The survey was determined reliable and valid	**VI**	Small convenience sample that limits reliability of tool but can be used to observe students during handoffs
Factors Affecting Handoff									
Article 13: Postoperative patient handovers – Variability in perceptions of quality: A qualitative focus group study									
Reine, E., Rustøen, T., Ræder, J., & Aase, K. (2018). Postoperative Patient Handovers variability in perceptions of quality: A qualitative focus group study. *Journal of Clinical Nursing*, *28*(3-4), 663 676. https://doi.org/10.1111/jocn.14662	**N/a**	Qualitative exploratory design	Eight focus groups (2 groups per profession) with 37 participants (29 nurses, eight doctors)	Independent variables: level of experience Dependent variable: profession	N/a	Thematic analysis Transactions were transcribed verbatim by author and checked against audiotapes	Timing and concurrency conflicts, handover structure, patient conditions, individual characteristic of clinicians involved, and team composition The postoperative patient handover is complex and variable process that needs to be carefully planned and executed – variability exists across professional groups and level of experience	**VI**	Low level of evidence takes place in Norway with slightly differed culture then America. Important to understand
Article 14: Factors Influencing Patient Safety During Postoperative Handover									

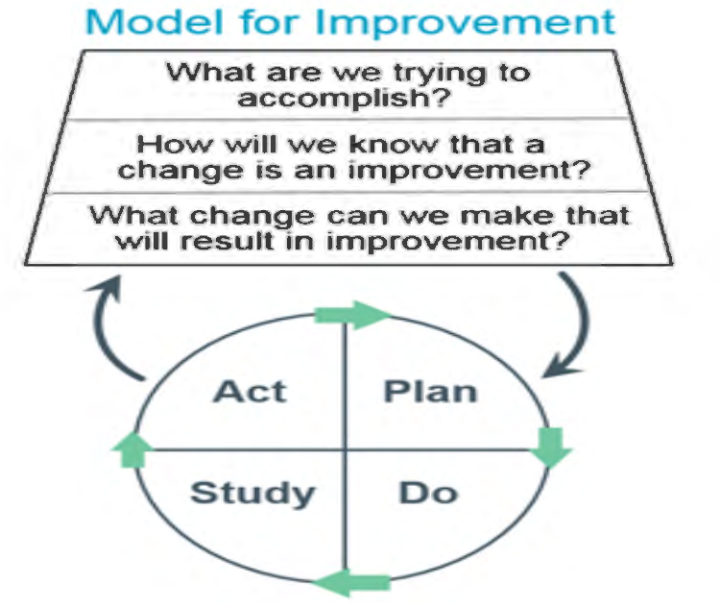
Rose, M., & Newman, S. (2016). Factors Influencing patient safety during postoperative handover. *AANA Journal*, *84*(5), 329 338.	**Social-ecological model**	Review of literature to identify key factors affecting patient safety during postoperative handovers. 23 articles identified	Empirical literature examines factors associated with patient safety and postoperative handovers in the context of anesthesia, in the cumulative index to nursing and allied health literature, Ovid, google scholar, and the joint commission website from January 2004 – March 2014 Excluded OB and Cardiac anesthesia related studies	**N/a**	N/a	N/a	They found that intrapersonal levels, communication style, professional background, cognitive processes, interpersonal level, teamwork, quality of information transfer, organizational environmental level, organized policy level all contributed to safety of report	**VII**	Lowest level of evidence however important to determine what the literature states is important regarding safety in the report
Article 15: A High-Fidelity Simulation Study of Intraoperative Latent Hazards and Their impact on Anesthesia Care-Related Handoff Outcomes									
Lowe, J., & George-Gay, B. (2017). A high-fidelity simulation study of intraoperative latent hazards and their impact on anesthesia care-related handoff outcomes. *AANA Journal*, *85*(4), 250–255.	**Reason's Human Error Theory**	Uncontrolled cohort studies with evaluation of simulation	Convenience sample of 58 recordings from Center of Research in Human Simulation video Library at VCU with 5 raters to identify latent conditions and create a score	**Independent variable: Person giving report Dependent variable: latent conditions and 10 criteria of proper handoff**	Delphi technique for congruity among 10 anesthesia experts, rated from 0-10 with 0 being no handoff content communicated and 10 being all handoff content communication	Spearman correlation, multiple regression analysis, scatterplot for R value	Distractions and interruption occurred 82% but didn't degrade handoff while noninteractive communication was greatest predictor of poor handoffs	**V**	Study uses simulation-based video which isn't always the same as practice however the participants were not told they were being filmed which can increase the replication of the study, lower level of evidence
Simulation Effectiveness									
Article 16: Effects of high-fidelity simulation based on life-threatening clinical condition scenarios on learning outcomes of undergraduate and postgraduate nursing students: a systematic review and meta-analysis									
La Cerra, C., Dante, A., Caponnetto, V., Franconi, I., Gaxhja, E., Petrucci, C., Alfes, C. M., & Lancia, L. (2019). Effects of high-fidelity simulation based on life-threatening clinical condition scenarios on learning outcomes of undergraduate and postgraduate nursing students: A systematic review and meta-analysis. *BMJ Open*, *9*(2), e025306. https://doi.org/10.1136/bmjopen-2018-025306		Meta-analysis that studied effectiveness of simulations on learning for nursing students	33 studies, n=3042	**Independent:** Simulations **Dependent:** Simulation's effectiveness vs control group on knowledge, performance, satisfaction, self-confidence, and self-efficacy in nursing students	Anova Q-test, Likert-type, dichotomous scales, open questions, multiple choice, Eggers regression, Trim and Fill and fail-safe methods	ProMeta V.3.0 and IBM SPSS V.10.0	HFPS sessions showed significantly larger effects sizes for knowledge (d=0.49, 95% CI) and performance (d=0.50, 95% CI) compared to other teaching methods	**I**	This study shows that simulation can improve performance of nursing students and is a meta-analysis allowing highest level of evidence to transfer into practice
Simulation in Anesthesia									
Article 17: Anesthesiology Handoff Simulation Case: A Handoff From Intensive Care Unit to Operating Room for Anesthesiology Learners									
Krishnan, S., Kumar, N., Diaz, E., Thornton, I., Ghoddoussi, F., & Ellis, T. A. (2020). Anesthesiology handoff simulation case: A handoff from intensive care unit to operating room for anesthesiology learners. *MedEdPORTAL*, *16*(1). https://doi.org/10.15766/mep_2374-8265.10887		Case-controlled study evaluating effect of simulation completeness, quality, and performance	N=27	**Independent: Person in simulation Dependent: completeness, quality, and performance of handoff**	Outcomes were evaluated using provider satisfaction surveys before and after the	Mean, median, mode, SD, qualitative and quantitative data, Cronbach's alpha, Interrater reliability	CA-3 performed best, simulations improved understanding, felt effective in improving handoff	**V**	The study has good qualitative data that showed when the best time to implement the scenario would be

					implementation of the new handover tool. In addition, interruptions during report handover errors and information sharing errors were evaluated as well.	correlation coefficient			
Simulation style									
Article 18: High-Fidelity Mannequin Simulation versus Virtual Simulation for Recognition of Critical Events by Student Registered Nurse Anesthetists									
Erlinger, L., Bartlett, A., & Perez, A. (2019). High-fidelity mannequin simulation versus virtual simulation for recognition of critical events by student registered nurse anesthetists. *AANA*, *87*(2), 105. https://doi.org/109		Randomized cohort study determined effect of mannequin vs virtual simulations in SRNA students	N=39	**Independent: Student in simulation type Dependent: year, recognition time, what order it was completed in**	Outcomes of the study were determined by SRNAs ability to recognize the signs of an acute myocardial infarction in a timely manner	Q-Q plots, Shapiro-wilk normality tests, Mann Whitney U test, Wilcoxon rank sum	Mannequin and virtual simulation were both effective however mannequin simulations allowed 2nd year students to have quicker recognition then virtual while there were no differences in 3rd year students	**III**	The study shows no difference in types of simulation if limitations of the study due to time, access or other issues with the simulation lab arise, other options can be used
Essential Factors of Handoffs									
Article 19: A Needs Assessment for Development of the TIME Anesthesia Handoff Tool									
Gibney, C., Lee, Y.-M., Feczko, J., & Aquino, E. (2017). A needs assessment for development of the TIME anesthesia handoff tool. *AANA Journal*, *85*(6), 431–437.	**Observation, Transaction, and Confirmation (OTC) Conceptual Framework**	Descriptive study needs assessment	N=82	**Independent: Essential handoff items Dependent: anesthesia providers**	Outcomes of the study was shown through descriptive statistics and graphs	Qualtrics and Microsoft excel	64% of providers did not have a systematic process during handoff and 73% believed they were given inadequate information. Components of handoff included airway type, airway difficulty, analgesia, anesthetic type, invasive lines, patient medical history, procedure, and vital signs	**V**	The study shows the importance of different items in the handoff
Article 20: Exploring Postoperative Handover Quality in Relation to Patient Condition: A Mixed Methods study									
Reine, E., Aase, K., Ræder, J., Thorud, A., Aarsnes, R. M., & Rustøen, T. (2021). Exploring postoperative handover quality in relation to patient condition: A mixed methods study. *Journal of Clinical Nursing*, *30*(7-8), 1046–		Observational mixed methods convergent design	N=109 quantitative data, n=48 qualitative	**Independent: handoff omissions Dependent: anesthesia providers handoff**	Outcomes of the study were qualitative using postoperative handover assessment tool and qualitativ	Thematic analysis and statistics	Omissions in handovers were higher in stable and comfortable patients, many handovers were interrupted, and checklist compliance was low	**V**	The study shows the importance of every handoff, no matter the acuity of the patient and how structured handoff increases performance

1059. https://doi.org/10.1111/jocn.15650					e using free-text fields notes and observation guides				

Appendix B

Institute for Healthcare Improvement Plan-Do-Study-Act (PDSA) Cycle



(IHI, 2021)

Appendix C

AneSBAR

Learner/s:_____ **Circle one**: Initial report given for relief **or** Report given to same provider coming back from a break
Rater:_____

Anesthesia Handoff (AneSBAR) Communication Rubric for Nurse Anesthesia Students (SRNAs)

Quantitative Rating	Ineffective (0)	Marginal (1)	Developing Competence (2)	Exceptional (3)	Score
Identify ☐ Introduces self (Name, professional title) ☐ Supervising MDA, surgeon ☐ Patient name and age/DOB	SRNA provided 0 of the 3 criteria	SRNA provided 1 of the 3 criteria	SRNA provided 2 of the 3 criteria	SRNA provided 3 of the 3 criteria	
					Score
Situation & Background ☐ Procedure/intervention and reason ☐ Past Medical History, labs, diagnostics ☐ Perianesthesia: weight, allergies, preop meds, T&S/blood availability, ATBx, beta blockers	SRNA provided 0 of the 3 criteria	SRNA provided 1 of the 3 criteria	SRNA provided 2 of the 3 criteria	SRNA provided 3 of the 3 criteria	
					Score
Assessment ☐ Type of anesthetic, induction, airway ☐ IV access/lines, ☐ Intraop meds (doses of opioids, muscle relaxants, vasoactive drugs), ☐ I&O (fluids, estimated blood loss, urine output) ☐ Intraop course/problems (or absence thereof)	SRNA provided 0-1 of the 5 criteria	SRNA provided 2 of the 5 criteria	SRNA Provided 3-4 of the 5 criteria	SRNA provided 5 of the 5 criteria	
					Score
Recommendation ☐ Intraop potential concerns – pending labs, ATBx Redosing, other meds (or N/A) ☐ Emergence – antiemetics, pain control	SRNA provided 0 of the 2 criteria	SRNA provided 1 or less of the 2 criteria	SRNA provided some but not all of the 2 criteria	SRNA provided 2 of the 2 criteria	
					Score
Total Score is out of 13 possible points **A passing score is 9 points or higher**					**Total Score**

(Vladinov et al., 2021)

Appendix D

Survey Questions

Preintervention Survey	1. Over the past two weeks, how many times did you use a standardized handoff process when either giving or receiving report of an anesthetized patient? 2. I am satisfied with the current transfer of care process for use when giving/receiving report of an anesthetized patient. 3. The current handoff process is appropriate. 4. The current handoff process lends itself to mistakes. 5. The current handoff process is comprehensive. 6. The current handoff process provides an effective way of transferring important information. 7. Positive aspects of the current handoff process. 8. Suggestions for improvement/barriers to the current handoff process 9. Additional comments
Postintervention Survey	1. How long have you been a Student Registered Nurse Anesthetist? 2. How long have you been a registered nurse? 3. On average, how many hours per week do you spend providing anesthesia care as a Student Registered Nurse Anesthetist? 4. Over the past two weeks, how many times did you use a standardized handoff process consisting of a mnemonic, or other standardized handoff tools when either giving or receiving report of an anesthetized patient? 5. Have you ever used an SBAR style handoff 6. The standardized handoff process is appropriate. 7. The standardized handoff process lends itself to mistakes. 8. The standardized handoff process is comprehensive. 9. The standardized handoff process provides an effective way of transferring important information. 10. I am satisfied with the standardized transfer of care process for use when giving/receiving report of an anesthetized patient. 11. If you have used the standardized handoff process in the past two weeks, please briefly describe any positive aspects of the process. 12. If you have used the standardized handoff process in the past two weeks, please provide suggestions for improvement/barriers to use. 13. If you have chosen not to use the standardized handoff process over the past two weeks, please explain. 14. Please provide any additional comments.

(Canale, 2018)

Appendix E

Clinical Scenario

Surgeon: Dr. Shoulder
Anesthesiologist: Dr. Jones

Age 62	Gender Male	Height 70 Inches	Weight (kg) 70	NPO status 10 hours	Name: John Smith DOB: 01/10/1960
BP 128/76	HR 58	RR 14	Temp 98.6	SPO_2 96%	
Surgery/Procedure: Reverse Total Shoulder Arthroplasty					
Surgical Position: Beach chair					
Anesthesia History/Reactions/Complications: None noted					
Allergies/Reactions: NKDA					
Mallampati I (II) III IV	Oral Aperture ☒ WNL ☐ Incisor Distance < 4cm ☐ Abnormal	TMD ☒ WNL ☐ < 6cm	Neck/Jaw ROM ☒ WNL/Full ROM ☐ ULBT: Class I II III ☐ Limited ☐ Severely Limited	Dentition ☒ WNL ☐ Loose ☐ Diseased ☐ Artificial	ASA I II (III) IV V

Home Medications

Medications/Doses
Aspirin 81mg Daily
Metoprolol Tartrate 50mg BID
Clopidogrel 75mg Daily
Omeprazole 20mg Daily
Lisinopril 5mg Daily

Review of systems

Review of Systems	Prioritized Problem List
CV	Previous MI, CAD, HTN
RESP	OSA with nightly CPAP
NEURO	WDL
MUSCULOSKELETAL	WDL
GI/GU	GERD
ENDOCRINE	WDL
HEME	WDL
SOCIAL HX:	1 PPD x 30 years

Labs:	
135 | 104 | 8 | 112 3.7 | 24 | 0.72	14.5 5.4 | 340 38

ANESTHESIA CARE PLAN

TECHNIQUE: ☒ GEN ☐ REG ☐ MAC

AIRWAY: MAC 3 Laryngoscope, Size 7.5 ETT

IV ACCESS: 20g PIV in Left hand

PHARMACOLOGIC PLAN

INDUCTION (Drugs/Dosages):
☒ PROPOFOL (140 mg)
☒ LIDOCAINE (80 mg)
☐ OTHER:

INTUBATION (Drugs/Dosages):
☒ ROCURONIUM (50 mg)
☐ SUCCINYLCHOLINE
☐ CISATRACURIUM
☐ OTHER:

MAINTENANCE (Drugs/Dosages):
☐ DESFLURANE
☒ SEVOFLURANE
☐ ISOFLURANE
☐ TIVA

EMERGENCE (Drugs/Dosages):
☐ NEOSTIGMINE (0.025-0.075mg/kg)
☐ GLYCOPYRROLATE (0.2mg/Neostigmine mg)
☒ OTHER: Sugammadex (140mg)

Other (Drugs/Dosages):
Zofran (4mg)
Dexamethasone (4mg)
Ancef (2g)

POSTOPERATIVE (Drugs/Dosages):
N/A

FLUID MANAGEMENT

EBL	**FLUIDS**	**BLOOD**	**COMPONENTS**
50ml	600ml of Lactated Ringers	**N/A**	**N/A**

Appendix F

Otterbein University
IRB Exemption Statement

Conversation between IRB Chair, Dr. Noam Shpancer and Dr. John Chovan, Department of Nursing Chair.

From: Shpancer, Noam <nshpancer@otterbein.edu>
Sent: Wednesday, October 13, 2021 9:44 AM
To: Chovan, John <jchovan@otterbein.edu>
Subject: Re: IRB and DNP Projects

John: The way I see it, a project is not subject to IRB review unless and until it collects data from human participants. So, I agree with you that these projects will not need IRB approval until someone decides to implement them for data collection, at which point that person may apply for IRB approval.

Thanks, Noam.
From: Chovan, John <jchovan@otterbein.edu>
Sent: Wednesday, October 13, 2021 9:10 AM
To: Shpancer, Noam <nshpancer@otterbein.edu>
Subject: IRB and DNP Projects

Good morning, Noam,

I could use some advice -- maybe a conversation -- about the Doctor of Nursing Practice final scholarly projects and submitting for IRB approval. The projects parameters from our accreditors for some of the projects have changed. The list of acceptable projects now includes the option of writing a plan for a project that is not implemented. So, it can effectively stop at the proposal stage, and then these projects can be available for a future student to implement if someone has that interest. I have at least two questions.

1. The IRB Guidelines states "Research means a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge." Most of these projects are not intended to develop or contribute to generalizable knowledge. They are clinical change projects that are intended to eventually change a clinical practice of health care professionals (humans) in one identified setting. They have the possibility of contributing to generalizable knowledge in that each would be an instance of a clinical change that, if implemented in other places by others, could eventually be generalized. But that is not the primary intent of the projects. Would they be considered research? I think they would not.

2. If indeed they are considered research and should be submitted for review by the IRB, at what point in the process should IRB approval be obtained? I would think that although implementation is not part of the initial project, review by IRB would be helpful to the original team in shaping their project plan. Yet if this proposal is not going to be implemented, then the approval to move forward would be moot. But if a second team eventually reads the proposal and wants to implement it, would they be the ones seeking IRB approval?

If you would prefer that we talk in real time, I am open to that. Or perhaps you could visit one of our faculty meetings for a discussion?

Thank you.

Best,

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"The world is starved for grace. If we are going to work at restoring fellowship and reaching people, we need grace now more than ever."
- Pastor John Swadley, Forest Park Baptist Church, Joplin, Missouri