Interprofessional Collaboration and Communication: The Importance of Proper Patient

Handoff to Improve Communication and Patient Safety

by

Christopher R. Elion, DNP Student, SRNA

Cedar Crest College School of Nursing, Nurse Anesthesia Program

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Dedication

To my wife, you bring so much positivity and happiness into my life. To my parents, who always

taught me that with hard work you can achieve anything.

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Abstract

When healthcare professionals do not communicate collaboratively and efficiently, patient safety is at risk. Handoff communication between healthcare professionals is an essential period where patient safety is a severe risk. It has been reported that communication breakdowns are the cause of 70% of severe medical errors. Improving the quality and continuity of information between healthcare professionals has demonstrated a reduction in these sentinel events and improve patient outcomes. Despite improving guidelines and standardization, anesthesia providers continue to use informal and brief handoffs. Educating anesthesia personnel on the I-PASS handoff tool supports the standardizing of the hand-off process, which directly supports improved patient safety. The purpose of this doctoral project was to improve interprofessional communication and collaboration by educating anesthesia professional with the best practices related to handoff report through online simulation. Educating anesthesia personnel during the SARS-CoV-2 pandemic has become a challenge and has required educators to adapt quickly and promptly. The use of healthcare simulation facilitates learning for students and health professionals, proving to be an effective educational tool during the SARS-CoV-2 pandemic. Simulation based education (SBE) can be used to meet educational goals and help safeguard the health of essential healthcare staff. Furthermore, the use of SBE can reinforce proper patient handoff to improve communication and collaboration.

Keywords: simulation-based education, interprofessional communication, interprofessional collaboration, standardized handoff, checklists, I-PASS

Interprofessional Collaboration and Communication: The Importance of Proper Patient

Handoff to Improve Patient Safety

Chapter One

Over the past decade, the number of studies on team interventions in healthcare has exponentially grown. This increased emphasis placed on principle-based training and simulation-based training statistically has provided the greatest opportunity for reaching improvement goals in a team environment (Buljac-Samardzic, Doekhie, & Wijngaarden, 2020). Interprofessional collaboration and communication are essential components when utilizing principle-based training and simulation-based training, and are pertinent to healthcare organizations. High fidelity simulation environments provide healthcare professionals the opportunity to generate, develop, and enhance their collaboration and communication skills. In addition, their confidence in their own skills is augmented without worrying about compromising patient safety. This use of simulation-based training can strengthen various communication and collaboration situations, including patient handoffs.

Handoffs in the post-operative care unit (PACU) occur when patients are transferred from one area in a hospital to another during their continuum of care. Each handoff is unique and specific to that patient. The handoff exchange is a sensitive interval, and any miscommunication can lead to numerous undesirable outcomes. If information isn't communicated or heard, such as a medication allergy or pertinent vital signs, morbidity or mortality can transpire. The handoff process in recent years has been inclined to error due to the increased number of handoffs being completed, as well as the increased severity of patient's health comorbidities. In addition, it has led to there being stress and dissatisfaction amongst healthcare workers regarding the quality of information received from the transport team (Petrovic et al., 2015). This well documented

phenomenon has led to healthcare organizations analyzing the best methods to improve the continuity of the transfer of information. The Joint Commission, The World Health Organization, The Institute of Medicine, and The National Quality Forum have all made handoff quality a priority of patient safety initiatives.

Background & Significance

On November 29, 1999, The Institute of Medicine (IOM) released a report called To Err is Human: Building a Safer Health System. This landmark report acknowledged that a large number of hospital deaths and errors in healthcare are frequently from individual accountability. To this day, thousands of people in the United States die due to medical errors each year. In fact, recent studies have estimated that approximately 251,000 deaths occur annually in the United States due to medical errors (Anderson & Abrahamson, 2017). This would make medical errors, or unintentional injuries, the third leading cause of death in the United States after heart disease and cancer. Recent data released from The Joint Commission found that out of the total 936 sentinel events that occurred during the year of 2015, communication was recognized as the root cause in more than 70% of severe medical errors. Communicating effectively with patients is a vital component to improving healthcare outcomes. Collaboration in healthcare can be described as the "capability of every healthcare professional, to effectively embrace complementary roles within a team, work cooperatively, share the responsibilities for problem-solving, and make the decisions needed to formulate and carry out plans for patient care" (Busari, Moll, & Duits, 2017).

In recent years, there has been a shift in healthcare organizations moving toward a blended learning approach. The use of simulation-based education (SBE) has become a means of replacing or amplifying real life experiences with guided experiences. SBE can be a

platform which provides a valuable educational tool that can enhance interprofessional and communication skill or team- based competences (Lateef, 2010). Furthermore, as the world continues to respond to the SARS-CoV-2 pandemic, SBE has rapidly become an education tool for many healthcare professionals. The growing complexity of today's healthcare system requires professionals to gain skills through online simulation. Specifically, the use of SBE has become a widely accepted method to improve communication and collaboration during patient handoffs. The new approach provides the opportunity to educate, train, and coach healthcare professionals with strategies for guiding the handoff process.

Clear communication is particularly important due to miscommunications that occur during patient handoffs from the operating room to post anesthesia care units (PACU) which have led to many adverse events. A handoff, also called a handover, is the exchange of information and care for a patient from one healthcare professional to another (Jurewicz et al., 2018). Handoffs can vary between written, verbal in-person, via telephone, at the bedside, care plan-based, or through chart review (Staggers & Blaz, 2012). Each patient handoff has the potential for miscommunication, which can lead to jeopardizing patient safety. The transfer of a patient from one setting to another, exclusively from the operating room to the PACU, is a complex process. Due to this complexity, the consequences of failed communication during handoffs have been well documented. These consequences include medication errors, inaccurate patient plans, delay in transfer of patient to critical care, delay in hospital discharge, and repetitive tests (Segall et al., 2012). Every handoff involves the exchange of pertinent medical information requiring both anesthesia personnel and the receiving registered nurse to be fully in synchrony. These responsibilities have been associated with increased healthcare provider anxiety and stress (Lorinc & Henson, 2017). The anesthesia personnel must be clear and concise

with their delivery of information, while the receiving registered nurse needs to be fully attentive and receptive to the information being delivered.

Communication Styles During the Perioperative Transition

In recent years, there has been much research on communication styles related to anesthesia handoffs. Communication styles vary amongst providers and affect how the information is exchanged. According to Robins and Dai (2015), "the tone, volume, and speed of the communication can affect the handoff." Each of these communication determinants greatly affect how the handoff is delivered to the received registered nurse. These elements may cause the omission of pertinent patient information during the transfer. In addition, the environment in which the handoff is completed can affect the providers ability to transpire the information. Perioperative handoffs occur in a busy and complex environment where various healthcare professionals interact with patients in a short amount of time (Boat & Spaeth, 2013).

SBAR Communication Tool for Handoff

SBAR, which is an abbreviation for situation, background, assessment, and recommendation, was first introduced by rapid response teams at Kaiser Permanente in Colorado in 2002 to investigate patient safety (Achrekar et al., 2016). Many healthcare organizations presently use SBAR as a handoff tool. The SBAR tool has shown improvement in communication amongst healthcare providers in the clinical settings by generating a common language; however, the communication tool has a broader application (Shahid & Thomas, 2018). The SBAR tool is not a suitable system for situations that are complex. SBAR was designed to be a communication method across hierarchal boundaries. It should be utilized as an escalation tool, not a handoff tool. Studies evaluating the practice of SBAR found that SBAR was ideal for situations where a brief summary suffices, and less than five key points need to be

communicated (Starmer et al., 2012). Postoperative patients are often characterized by high complexity regarding invasive monitoring, IV vasoactive infusions, assisted ventilation, etc. In addition, there were limitations with the use of SBAR in patients with complex medical histories and care plans (Shahid & Thomas, 2018).

Effective Handoff Communication Utilizing the I-PASS Handoff Tool

Given the limitations of SBAR, alternative mnemonics and checklists have been developed, implemented, and tested for use in handoffs of care (Starmer et al., 2012). Over the past decade there have been clear objectives for effective handoff communication. Objectives for effective handoff communication were first outlined in 2007 when the Joint Commission National Patient Safety goals advised the implementation of a standardized handoff (Canale, 2018). Following this outline, organizations such as the Association of periOperative Registered Nurses (AORN), Agency for Health Research and Quality (AHRQ), and The US Department of Defense Patient Safety Program (DoD PSP) issued a policy guide and toolkit for standardizing handoffs (Canale, 2018). Over the years, there has been undeniable evidence that suggests the utilization of a standardized handoff can improve the transfer of information during the handoff of patient care. Lack of standardization has been associated with an increase in sentinel events, medication errors, decreased perceptions of patient safety, decreased healthcare worker satisfaction, and declined quality and continuity of the transfer of information (Canale, 2018). Studies have also shown that with the use of a standardized checklist, the percentage of items exchanged using PACU handoff increased (Potestio, Mottla, Kelley, & DeGroot, 2015). Using structured handoff that is standardized allows for information communicated between the sender and receiver to be consistent.

I-PASS, a tool designed for the handoff transition, possesses the specificity that a solid handoff requires. "I PASS the BATON" is a mnemonic which aims to standardize verbal handoffs. Due to its structured format, its ability to reduce errors and prevent adverse events have been well recognized (Rosenbluth et al., 2018) The I-PASS mnemonic provides a framework for the patient handoff process as follows: I: Illness severity P: Patient summary A: Action list S: Situation awareness and contingency planning S: Synthesis by receiver (Starmer et al., 2012). I-PASS is part of TeamSTEPPS which is an evidenced-based set of teamwork tools designed by the AHRQ. These set of tools aim at optimizing patient outcomes by improving communication and teamwork skills related to patient safety. The I-PASS Nursing Handoff Bundle intervention consists of educational training, verbal handoff I-PASS mnemonic implementation, and visual materials to provide reinforcement and sustainability. The I-PASS handoff system has been shown to increase efficiency, decrease time spent during handoffs, and decrease medical errors by 23% and 'near misses' by 30% (Starmer, 2015).

Problem Statement

Despite these findings, healthcare professionals continue to utilize methods that are often informal and disorganized. The lack of organization can negatively impact patient safety and can lead to poor patient outcomes. There continues to be a knowledge deficit when it pertains to standardized handoff reports. Due to the impact of SARS-CoV-2 pandemic, a group of senior anesthesia students at Cedar Crest College in Allentown, PA have designed and created a simulation-based education module with the purpose of improving interprofessional communication and collaboration. The follow PICO question was developed: In anesthesia providers and anesthesia students, does an online simulation-based educational intervention improve knowledge on interprofessional communication and collaboration among providers?

The module was divided into three sections all with the aim of improving communication and collaboration. The three categories include: (1) enhancing communication through the implementation of an enhanced recovery after surgery (ERAS) protocol, (2) improving collaboration and communication between a preceptor and a student, (3) the importance of utilizing a patient handoff tool to improve communication and patient safety. Utilizing a simulation-based education module, this project aims to marginalize missed communication of pertinent patient information and aid in the continuity of the transfer. Furthermore, the focus of this paper will be the education of a standardized handoff tool.

System and Population Impact

The current practice of utilizing an SBAR hand off practice demonstrates an outdated approach to handoffs. Given the growing number of surgeries across the country and world, it is imperative that healthcare organizations update their practices by implementing a standardized handoff tool such as the I-PASS mnemonic. The successful use of the I-PASS handoff tool by medical professionals benefits all involved parties. The use of a SBE module will give certified registered nurse anesthetists (CRNA) and student registered nurse anesthetists (SRNA) the ability to gain knowledge related to best handoff practices through virtual simulation during the SARS-CoV-2 pandemic.

Patient safety in the post-operative phase is the inhibition of medical errors that can lead to negative patient outcomes. Improving interprofessional collaboration and communication during the patient handoff period has the ability to improve patient safety and quality of care. "An average-sized hospital, based on an estimated 2 to 3 handoffs per patient, per day, will have approximately 1.6 million handoffs per year" (I-PASS Patient Safety Institute, 2020). These handoffs leave patients vulnerable to harm. Furthermore, the cost of medical errors in the United

States can place huge burdens on healthcare organizations. One study performed by CRICO (2015), an organization aimed at improving communication and reducing medical malpractice risk, found that communication was a factor in 30% of malpractice cases studied from 2009 to 2013. The 7,149 cases that included communication errors as a contributing factor sustained $1.7 billion in losses, and nearly $250,000 per individual case (CRICO, 2015).

Purpose, Expected Outcomes, and Objectives

The purpose of this doctoral project was to improve interprofessional communication and collaboration by demonstrating the best practices related to handoff reports. This quality improvement project had the expected outcome of improving knowledge for both anesthesia providers and anesthesia students related to interprofessional communication and collaboration among providers. The objective of this project was for the learner to have improved knowledge on the use of a post-operative handoff tool when additional training and education was provided through an online simulation module. In addition, anesthesia providers and anesthesia students would gain knowledge related to the best practices associated with post-operative handoffs and would have increased knowledge related to the damaging effects of ineffective communication. These objectives were measured by accessing and analyzing data collected by the DNP group after a pre- and post-implementation survey.

Chapter Two

Review of the Literature

The literature search process was initiated by developing a PICO question. Core research resources, such as key health and social care databases were used to ensure literature covered a significant proportion of published research. The following databases were utilized for the search, including The Cochrane Library, Cumulative Index to Nursing & Allied Health Literature (CINAHL), and PubMed. These databases offered a wide array of published quantitative and qualitative studies. In addition, professional practice guidelines were also reviewed from organizations including the periOperative Registered Nurses (AORN), The Joint Commission, and the US Department of Defense Patient Safety Program (DoD PSP).

Following a critical appraisal of the relevant evidence, a total of 69 articles were identified and five publications were selected to answer the proposed PICO question. The studies identified were evaluated based on quality and strength. Quality was appraised using the Johns Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool (Dearholt & Dang, 2012) and strength was appraised with the Rating System for the Hierarchy of Evidence (Polit & Beck, 2017) (See appendix A). Studies that were published prior to 2010 were disqualified to ensure the most up to date information was utilized. Additional search limitations included using only full text limit and scholarly/peer reviewed limit. Individual study characteristics were entered into an evidence synthesis table for closer examination. The type of studies located included systematic reviews, randomized controlled trails, and qualitative improvement projects. Additional search techniques included the use of AND / OR appropriately to combine results of separate searches. Key words that were utilized during the search process included *standardized handoff, checklists, post-operative, PACU, handoff, anesthesia, SBAR,*

TEAMSTEPSS, and I-PASS. Following the SARS-CoV-2 pandemic, an additional literature review was completed to uncover resources highlighting effective communication techniques along with the benefits of online education modules. Key words that were searched included: *simulation-based education, interprofessional communication, interprofessional collaboration.*

All papers that were identified addressed patient transfers from the operating room to the PACU were included in the literature review. In addition, all studies developed and utilized a handoff intervention, and formally assessed its impact on process measures during the handoff in the post anesthesia care unit setting. Although there were differences between the types of standardized handoff tool that was utilized in each study, each study found that standardizing this process improved patient care by increasing the continuity of the transfer of information. In addition, it's important to note that Jurewicz et al. (2018) suggested that there may not be a "one size fits all" handoff tool for each healthcare setting due to each setting having its own issues and challenges related to hand-offs.

Segall et al. (2012) systematic review reviewed over 500 papers dealing with postoperative handovers and found that although the quality of research on postoperative handovers varied and strong evidence was lacking, several recommendations were broadly supported. The first recommendation was that standardizing the handoff process can improve patient care by ensuring information completeness and accuracy and increasing the efficiency of the patient transfer process (Segall et al., 2012). In addition, Segall et al. (2012) recommended the use of a checklist or tool to guide communication and protocols to structure clinical handoffs.

In 2006, The Joint Commission established a National Patient Safety Goal that addressed handoff communication, and by 2010 the requirement became a standard (The Joint Commission, 2017). As part of this recommendation, the use of a tool to guide communication

was strongly encouraged. Robin and Dai's (2015) randomized cross-sectional study found that the use of a tool by an anesthesia provider lowered the rate of callbacks for information clarification for RNs by a degree that was statistically significant, thus improving continuity of the transfer of information. In Petrovic et al. (2015) cross sectional study, the perioperative handoff protocol implementation was associated with improved information sharing and reduced handoff defects. In both Canale (2018) and Wright's (2013) quality improvement studies, the quality and continuity of information transfer were predominating themes that demonstrated improvement with the use of a standardized handoff procedure. Overall, each of these studies demonstrated that the implementation of a standardized handoff improved the efficacy and efficiency of the handoff.

Another common theme amongst these articles was that the implementation of a standardized handoff tool improved healthcare worker satisfaction and teamwork. Although measuring the quality and continuity of the information transferred is an important outcome, without healthcare worker satisfaction and teamwork, implementing any type of practice change can be extremely difficult. For this reason, it was essential to determine if the utilization of a standardized handoff practice improved satisfaction and teamwork. Studies have shown that there was dissatisfaction amongst healthcare employees working in PACU and ICUs regarding the quality of information received from the transport team for transferred patients (Segall et al., 2012). The extent to which their validity and reliability have been evaluated is inconstant, however it has been a common premise amongst articles that the use of a handoff improved healthcare worker satisfaction and teamwork.

In Segall et al. (2012) systematic review, the utilization of a tool improved team skills and communication in addition to improving the quality of the handover. Another systematic review

which included 19 studies and had a pooled sample size of 21,604, was a meta-analysis of

teamwork and communication contributing to quality and continuity of information transfer

(Lyons & Popejoy, 2016). This review study demonstrated a positive standardized effect size of

1.180, indicating an improvement in team communication when a tool was used (Lyons &

Popejoy, 2016). There is also evidence that a structured handoff tool can improve employee

confidence. In Wright's (2013) quality improvement project consisting of a sample size of 1000

CRNAs found that confidence improved with a standardized handoff process indicating

satisfaction.

In Canale's (2018) study, the implementation of the standardized tool I-PASS signified

that quality of the transfer of information, perceptions of patient safety, and healthcare worker

satisfaction improved through the implementation of a standardized handoff procedure when

CRNAs transferred care of anesthetized perioperative patients. A study completed by Blazin,

Sitthi-Amorn, Hoffman, and Burlsion (2020) found that the inpatient nurses reported reductions

in handoff-related errors following I-PASS implementation. There was also strong evidence

supporting its ability to improve patient safety (I-PASS PSI, 2020). Furthermore, the

implementation of the I-PASS tool can be applied to a variety of disciplines and types of patient

handoffs.

Evidence Based Practice

After a comprehensive literature review was conducted, it was determined that strategies

to improve handoffs from the operating room to the PACU should include a standardization of

practice. Using structured or standardized handoffs ensures uniformity and consistency in

information communicated between the sender and receiver (Arora, Auerbach, & Melin, 2017).

When a handoff tool is utilized, there has been a strong association in avoiding communication

errors that can omit adverse events. It also improved teamwork amongst healthcare professionals as well as overall employee satisfaction (Segall et al., 2012). Upon a review of numerous structured handoff tools, one handoff tool has demonstrated to be superior due to its high success rate in patient safety. The I-PASS handoff tool has been implemented in hundreds of hospitals across the United States and has shown that when all aspects of the I-PASS bundle are implemented, it can reduce patient harm by up to 70% (I-PASS PSI, 2021).

With the goal of enhancing interprofessional communication and collaboration, this DNP project recommends the practice change of utilizing AHRQ's standardized handoff tool I-PASS for the patient handoff. As a means of implementing this project during the SARS-CoV-2 pandemic, participants of the project were educated on the use of the I-PASS tool through SBE with the intent that participants would incorporate the I-PASS handoff tool within their own practice. This project was aimed at optimizing patient outcomes by improving communication and collaboration skills related to patient safety. The Joint Commission stated that the best way to establish a standardized handoff tool is by "building a process map, standardizing content in the form of a checklist, implementing and disseminating the tool, and monitoring to ensure tool effectiveness" (Meisel and Smith, 2015, p. 80). The evidence from this literature review supported healthcare organizations standardizing their handoffs with the use of the I-PASS tool. Patient safety is the top priority in patient care, and by implementing a handoff tool, pertinent information can be easier to recall.

Chapter Three

Theoretical Framework

The Kurt Lewin Change Theory is widely accepted within the healthcare community as an effective process for implementing meaningful and successful change. Considered one of the founding fathers of change management (Lock, 2017), Lewin and his model are regarded by many as the classic or fundamental approach that organizations can use in order to help people adapt to and deal with change. Lewin believed that if you understand why people do things, how they do things, and what can be done to influence the forces that impact them, change is capable of taking place (Shirey, 2013). With this understanding in mind, the doctoral students involved in this project chose to adopt his theory for implementing our project. As a change process model, the Kurt Lewin Change Theory involves three simple change stages that are designed to improve the odds of success and subsequent practice improvement (Barrow et al., 2017). These stages include: (1) unfreezing, where there is a recognized understanding that change is needed, (2) moving, which is the process of initiating change, and (3) refreezing, which is the establishment of a new status quo (Barrow et al., 2017).

The first stage, unfreezing, includes identifying a problem, recognizing a need for change, and organizing the correct people to make change happen (Shirey, 2013). During this period, there must be an internal realization that the potential benefits of the proposed or recommend changes outweigh the potential negatives that are associated with the change process as a whole (Batras et al., 2016). This is reliant on groups of individuals working together in order determine what needs to be changed, accomplished most effectively through communication and education with each the stakeholders who are involved.

Understanding these objectives, this DNP project created an online educational module that recognized three anesthesia practices in which change can occur: the use of an ERAS protocol for spine surgery, effective communication techniques between a preceptor and student, and the use of a post-operative handoff tool. With each subject, extensive research was conducted in order to determine the best practices related to their implementation. Once best practices were identified, it served as a means of demonstrating that change was needed, and that a justification existed to unfreeze current practice. This simulation module not only promoted the unfreezing stage by demonstrating current practices, but it also set the stage for what the newest research said while simultaneously comparing it to current practice. As identified by Deborah (2018), in order to effectively prepare an organization for change, the process has to begin at the main point, keenly scrutinize current fundamentals, and motivate participants, all while simultaneously cultivating trust and a recognition for change.

During the second stage of Lewin's change theory, there is a shift from what is planned in the unfreezing phase towards a new and desired behavior. Appointed the change or movement stage, this period is where the actual implementation and trialing component of the proposed change takes place, utilizing extensive research, action and learning in order to effectively achieve its results (Batras et al., 2016). Initiated with new approaches to current problems that arrive at new learning outcomes (Lock, 2017), it is during this stage that resistance is overcome and compliance to the new change is verified (Sullivan, 2012). In order to accomplish this, two factors play an important role: employee resistance and the openness to change (Hussain et al., 2018). According to Hussain et al. (2018), in order to overcome the resistance to organizational change, the oldest and most effective strategy is to have healthcare employee involvement. By communicating clearly and widely about the planned implementation, who will be impacted, and

the overall benefits that are associated with its outcomes, the sharing of information will both involve and empower its participants while simultaneously promoting the change process.

In order for this DNP project to garner participation and have a platform for its learners, an online educational module was created. This educational module was used to demonstrate simulated scenarios to the learner, clearly communicating evidence-based research with regards to the proposed best practices. Understanding that resistance to change is a factor of success, it was important to present the information in a way that engages the learner, while also helping them to understand the need for change within their own practice. The simulated module was designed to first present the new information that was gathered from the literature, followed by a demonstration of its use in everyday practice compared to the current standard. In conjunction with the module a pre- and post-survey was implemented, allowing the authors to measure the transition (or change) from old practice to new. This demonstrated the knowledge that participants have gained from watching the module.

The final phase of Lewin's change theory is known as refreezing. During this time, new attitudes, values, and behaviors are established as the new status quo (Lock, 2017). At this point, the goal is that those who were involved in the change process now consider the change as the new norm, however, these individuals will also have to work with each other in order to develop strategies that are aimed at reinforcing the new changes that have been implemented. Without establishing the new status quo (refreezing), healthcare employees have an increased risk of returning back to old habits.

As such it is important during the refreezing phase to not only identify what supports change, but also the barriers against sustainability. Batras et al. (2016) identifies that at this time, organizational norms, culture, practices and policies should now become realigned in order to

support the continuation of implemented change. This begins through an analysis of the data

collected after institutional implementation of the module. Ultimately, the goal was that

providers will come away with enhanced knowledge so they can incorporate the information

amongst themselves to sustain change. Furthermore, proponents for the new change will become

an essential aspect of the refreezing phase. This is because they will communicate with

providers to reinforce their newly learned knowledge, creating sustainable change that is

collaborative in nature, in additional to being effective and meaningful. To accompany this,

Deborah (2018) concludes that the best action to implement the refreezing phase is to

institutionalize the change, ensuring that it becomes a normal part of day-to-day processes within

the organization.

Chapter Four

Project Design

  This DNP project utilized a quality improvement design with a non-experimental pre and post-test methodology. According to the Joint Commission (2016), "a systematic complete handoff completion process is similar to the pre-takeoff and pre-landing procedures used by aircraft crew. Aviation has made great progress in quality improvement in these procedures through the use of checklists and mnemonic." A similar approach was utilized for this DNP project. The population of interest for this DNP project was anesthesia personnel. Inclusion criteria for this DNP included nurse anesthetists and student nurse anesthetists who were involved in patient handoffs in the PACU. Healthcare professionals that were excluded from this project included ancillary staff that did not normally partake in the handoff process. The introductory agenda of this project design was to improve handoff communication between the anesthesia staff at St. Luke's University Health Network in Allentown, PA and their post-operative nursing staff. An employee anecdotal analysis was conducted, and it was determined that there was a need for improved quality and continuity of the transfer of information. Given the growing number of handoffs completed at St. Luke's Allentown campus due to it being a teaching institution that was involved in medical research, it was vital that the organization utilized the most evidence-based practices related to handoffs. After the impact of the SAR-CoV-2 pandemic and with limited access to hospital resources, it became evident that a new direction was necessary. A group of senior anesthesia students with similar purposes came together and created a one-hour SBE module with the purpose of improving interprofessional communication and collaboration while simultaneously incorporating research from the needed change that each

individual group member found within their own clinical setting. The simulation-based

educational module incorporated each individual group members topic in a sequential manner.

Ethical Considerations/Protection of Human Rights

Cedar Crest College (CCC) Institutional Review Board (IRB) approval was obtained

prior to initiation of the DNP Project. Approval was granted in June 2020. All information

obtained from participants who watched the educational module and completed the in-module

surveys were kept anonymous. The DNP students involved in this project followed all standards

of care for practice in the simulation center operating room and PACU. CRNAs and SRNAs

participated in the educational module on a voluntary basis, and assumed no no risk and had no

direct benefit from participation. Refusal of participation or failure to finish the educational

module had no loss of benefits or penalty. A customized password was utilized to prevent access

from unauthorized users. The password was only shared among the doctoral group conducting

the project.

Implementation Plan

The implementation plan for this project was to be carried in three phases. The first phase

was designed to gather participants to watch the online educational module. In the first week of

February 2021, a link was sent out to CRNA's emails and SRNAs enrolled in anesthesia

programs that were located in the greater Philadelphia region. In an attempt to try and increase

participation, reminder emails to participate in the educational module were sent out each week.

The second phase of the implementation plan involved participants completing the

module. During this phase, educating about effective hand-off communication as a universal

priority was essential. The participants began the implementation phase by answering nine

knowledge-based questions. After completing the 9 questions, participants then watched an

approximately one-hour PowerPoint presentation which informed them about the principles and

requirements for effective hand-off communication. The one-hour PowerPoint presentation also

included other communication and collaboration topics, such as communication between a

preceptor and student and the education about collaboration during an ERAS protocol for spine

surgery. The Microsoft PowerPoint presentation also discussed the consequences and failures of

poor hand off communication, as well as the positives of utilizing the I-PASS handoff tool.

Disseminating credible evidence with clear implications for practice change was necessary

during this phase to be successful. The participants also watched a simulation of an unorganized

verbal hand off followed by simulation of verbal handoff using the I-PASS mnemonic for a side-

by-side comparison. The module ended with participants answering the same nine knowledge-

based questions.

The third phase of the implementation plan involved surveys being analyzed by the

doctorate group using analytical software. The results of the surveys analysis aided the group in

determining if knowledge was improved for both anesthesia providers and anesthesia students

related to interprofessional communication and collaboration among providers. The plan was for

all surveys to be completed by March 5, 2021, allowing anesthesia professionals a four-week

time period to finish.

Data Collection Tools

The evaluation of outcomes for this project came from pre- and post-intervention surveys

that were accompanied after the simulation educational module. All participants created a unique

patient identifier to ensure that participation of the survey was not duplicated and to maintain

anonymity. All pre- and post-intervention surveys were conducted electronically and

anonymously through a Wix website widget. To ensure participation continued throughout the

four-week timeline, emails were sent each week as reminders. Once the surveys had been

submitted, data was analyzed. Compensation was not provided to project participants.

Resources Needed

The resources needed for this project were materials that were used for filming and

editing as well as resources that were utilized at the Cedar Crest College simulation center. The

simulation modules were video recorded with a dual 12MP ultra-wide and wide camera that

came standard on an iPhone 11. All video recording was edited with iMovie software which was

accessible on a Mac0S system. The simulation center at Cedar Crest college allowed the DNP

group the resources needed for filming in an operating room and PACU setting. Some of the on-

campus simulation resources utilized included a hospital bed, standard hospital hemodynamic

monitors, high-fidelity mannequins, intravenous pumps, blankets, sheets, as well as individual

rooms that replicated a hospital setting.

Cost Benefit Analysis/Budget

The budget required to complete the project was primarily associated with developing the

learning module. The Wix web page design 3-month subscription cost approximately $90. The

DNP group utilized the on-campus simulation lab at Cedar Crest College for all recording

purposes. All resources used at the Cedar Crest College simulation center for the purposes of

recording were available to graduate nursing students who were enrolled in the Cedar Crest

College Nurse Anesthesia program. The learning module was recorded with a DNP students

personal protected password iPhone and edited with a DNP students' laptop where iMovie

editing software was accessible.

Chapter Five

Implementation Procedures and Processes

The implementation of this DNP project was centered around a common goal of improving interprofessional communication and collaboration amongst anesthesia professionals. Due to the SARS-CoV-2 pandemic, the nursing administration at Cedar Crest College met to review each individual student project, which lead to the creation of this DNP group. During these meetings, it was determined that a recorded simulated module would allow for project implementation while maintaining social distancing guidelines to ensure the safety of participants. Initially, three individual topics were researched toward improving best practice: (1) the use and implementation of an ERAS protocol for spine surgery, (2) effective communication between a preceptor and student, and (3) the use of a handoff tool in the PACU.

During DNP Project I, thorough research was initially conducted by each individual to support why their topic was of importance to clinical anesthesia practice. Once interprofessional communication and collaboration became the primary focus for a group project that incorporated each individual subtopic, new research was conducted to identify how we as a group could implement best practice, specifically through the use of an educational module. Utilizing evidence-based research, creation of the actual module began with each group member writing scripts that demonstrated current or poor practice followed by improved clinical practice. Incorporating voice-over PowerPoints to enhance participant learning, the design of the simulated module illustrated how the theme of interprofessional communication and collaboration demonstrates evidence-based best practice for each individual topic.

During DNP Project II, the simulated module was filmed at Cedar Crest College in the graduate simulation center. The three team members for this DNP project were utilized as actors,

and helped each other with the individual components of the project. All props and equipment were included in the simulation center. The simulated module was filmed using an iPhone 11 and editing for the final project was completed on a MacBook using iMovie. Upon completion, a Wix page was created as a platform to store and access the module. In order to demonstrate increased knowledge from the educational module, pre and post-module surveys were created. The surveys were created with Wix widgets and were housed on the same webpage which allowed for all components of the module to be accessed in one primary location.

During DNP Project III, the project was implemented over a four-week timeline beginning on February 5th, 2021. During the implementation phase, educational modules were sent out to a convenience sample via an email link. Participants were asked to sign an informed consent agreement prior to having Wix page accessibility that housed the modules and its corresponding surveys. Participants were given a four-week period to complete the educational module and weekly reminders were sent out to all potential participants. Participation was always on a voluntary basis.

Chapter Six

Evaluation and Outcomes

Evaluation of this DNP project involved comparing final results to baseline results. To determine if the online simulation-based educational module improved knowledge on interprofessional communication and collaboration amongst anesthesia providers, participants answered nine knowledge-based questions. The nine knowledge-based questions can be found in Appendix D. Each participant created a unique identifier that was attached to their pre- and post-implementation survey results. Any pre- and post-implementation survey that did not include a unique identifier was excluded from evaluation. The online survey utilized a multiple-choice layout with eight forced-choice questions and one select-all-that-apply question. Data was scored based on the total amount of questions answered correctly in the pre- and post- implementation survey.

For analysis, IBM SPSS statistics version 27 was utilized. After collaboration and validation, it was imperative to get the same number of pre- and post-implementation surveys. After 30 emails were sent out, a convenience sample of 15 participants was achieved. Each participant completed the pre- and post-module survey voluntarily. Analysis first began with a paired sample t-test to evaluate the pre- and post- survey means. The paired t-test revealed a pre-test mean of 5.73 and a post-test mean of 8.13. Based on these findings, the mean improved by 2.4 or a 27% increase in correct scores on the post-module survey. The SPSS paired t-test can be found in Appendix B. A standard deviation was also performed to determine if individual scores deviated from the mean. The pre module test had a standard deviation of 1.207 and the post module test had a standard deviation .915. Based on these findings, individual scores did not deviate far from the mean. Finally, a p-value was performed to determine if statistical

significance occurred. The findings were statistically significant if the p value is less than .05. The p-value between the pre module survey and post module survey was <0.001. Based on these findings, it was demonstrated that there was a statistically significant increase in knowledge on interprofessional communication and collaboration when an online simulation based educational module was utilized.
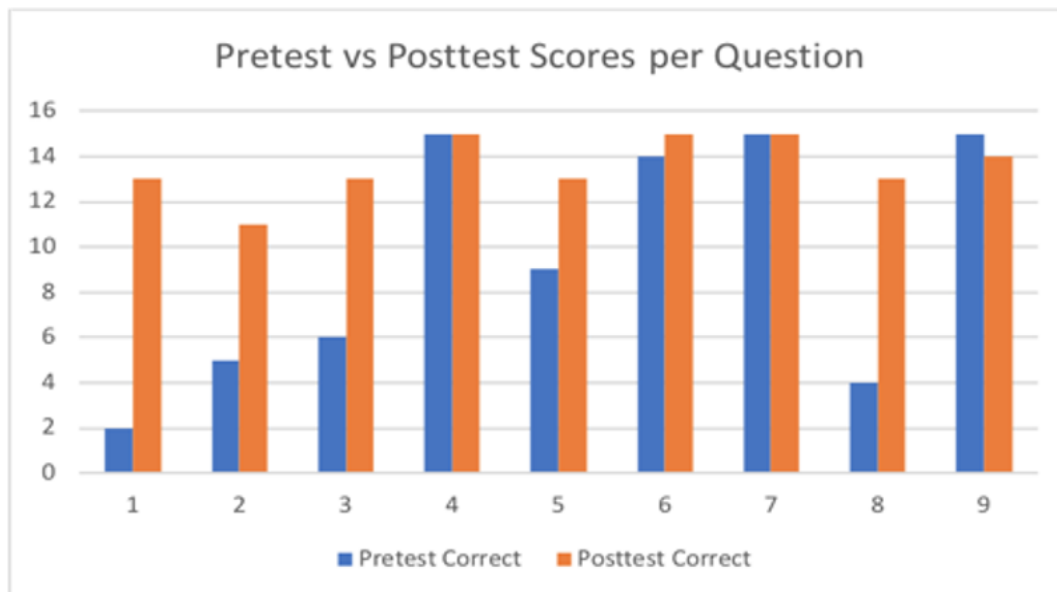
Discussion

Clear and efficient communication is a significant component in patient safety and outcomes. This project was created during the SARS-CoV-2 pandemic and incorporated three individual subtopics that each aimed at improving interprofessional communication and collaboration. Over the past year, the SARS-CoV-2 pandemic has dramatically changed the way education was conducted across the globe. The use of an online educational module became an excellent platform when in person teaching was inaccessible. Online training simulations have a

wide range of uses and can offer a variety of benefits. This DNP project demonstrated that knowledge was improved when an online simulation was utilized amongst anesthesia providers.

In addition, the use of an online simulation to improve patient safety related to handoff was noteworthy. Although this doctoral project did not measure patient safety, it suggested that improved knowledge related to handoff communication can improve patient outcomes and decrease sentinel events. The correlation between communication errors and sentinel events in the United States was undeniable. The I-PASS pneumonic was developed from best handoff practices cited in the literature and has proven to work in practice. Furthermore, it was associated with a 30% reduction in preventable adverse events (Starmer et al., 2014).

The objectives of this project were met throughout the projected timeframe. The objective was to increase knowledge over the four-week time frame. Although increased knowledge was attained, the sample size was small. Increasing the sample size would have strengthened the project and decreased the margin of error. Increasing the length of the implementation time frame as well as sending out a larger email group would have also allowed for a larger sample size. The introductory needs assessment, which was performed at St. Luke's University Health Network Allentown, PA demonstrated the need to improve communication between the nursing staff and anesthesia department. Although this project was unable to be performed at St. Luke's Hospital Allentown campus, it does demonstrate that when a group is educated about handoff communication knowledge is absorbed. That group can then apply what they learn to the everyday practice.

Chapter Seven

Implications for Nursing Practice

The SARS-CoV-2 pandemic has forced educators across all levels of education to promptly adapt to online education. It is difficult to determine the future of online education in the post covid era. The impact of online learning simulations such as this one could permanently change how education is delivered. For some educators and institutions, return to traditional learning styles will be obligatory and necessary. But for others, the movement to new online learning styles will change how education can and will be delivered. Analysis from this project demonstrated that participants increased knowledge on the use of an ERAS protocol for spine surgery, effective communication techniques between a preceptor and student, and the use of a post-operative handoff tool after watching an online simulation model.

The post-operative handoff is a vulnerable phase for patients as it encompassed healthcare staff from two different disciplines, each with their own priories of care (Nagpal et al., 2013). Conversely, the priory goal of patient safety was the same for both disciplines. The implementation of a standardized handoff, such as the I-PASS mnemonic drastically ensured pertinent information is transferred. Anesthesia providers are highly trained professionals, yet they are still at risk of human error. Working in a fast-paced complex environment with various levels of sensory stimulation imposes a higher risk of error. According to the Joint Commission (2017), the use of a standardized communication tool or checklist is essential to ensure patient information is transferred during post-operative handoffs and to improve patient safety. This project can serve as a model to educate staff on the use of a handoff tool or mnemonic.

Strengths and Limitations of the Project

In completing this project, there were numerous strengths and limitations that were identified. The first strength of this DNP project was that it allowed for individualized, asynchronous learning. Furthermore, it allowed participants to complete the online educational module at their own pace and own convivence. The DNP group viewed this as a strength for the reason that not all individuals learn at the same pace. Online educational modules allow for participants to take the time they need to process and understand information that is presented to them compared to in-person educational workshops. Another strength of this DNP project was that it was stored in a singular location. This allowed participants to complete the module on any internet accessible electronic device. A final strength that was identified was that the survey was short and concise. The nine pre- and post-module survey focused on key learning points that were geared towards improving professional practice.

After the implementation of the online module, there were some considerable limitations that were identified. The first limitation of this DNP project was the SARS-CoV-2 pandemic. The pandemic exacerbated the education crisis. At times during the project, the DNP group had inaccessibility to resources and were put on hold by the institutional IRB. It also obligated the DNP group to complete this project remotely. Another limitation that was identified was the project only having a four-week implementation timeframe. The DNP group believes this limited the sample size to only 15 participants. Leaving the implementation time window open longer perhaps would have increased the sample size. The DNP project also utilized a convivence sample which can affect the validity of the data results. Convivence samples can lead to the inability to generalize the results of the pre- and post-module survey to the population as a whole.

Linkage to DNP Essentials

During this DNP project, essential activities were used as a guide in order to meet the

standards associated with Cedar Crest College's DNP program. The essentials were created by

the American Association of Colleges of Nursing (AACN) and allow doctorial prepared students

to apply the essentials to their daily practice, synthesize evidence, apply evidence to initiate

change, and communicate the best evidence. The eight essentials of the Doctor of Nursing

practice must be met by all DNP Projects. The DNP essentials were the cornerstone of this

project. Refer to Appendix C for the essentials and how this project fulfills each essential.

Chapter Eight

Summary and Conclusions

The SARS-CoV-2 pandemic has drastically changed how education is disseminated and continues to be a real-world healthcare challenge. Simulation-based education is increasingly being endorsed as an educational strategy towards effectively teaching, educating, training and coaching healthcare professionals throughout a wide range of real-life scenarios (Piryani et al., 2019). Interprofessional communication and collaboration continue to be an important aspect of healthcare delivery. The simulated educational module related to effective communication enhanced the learner's knowledge on how to effectively communicate with a student, use of a post-operative handoff tool, and identify interventions with an ERAS spine protocol in the pre-, peri-, and post operative periods.

Dissemination/Project Sustainability

There are several plans presently to disseminate the project. At the college level, the project will be disseminated to gradate faculty on April 15, 2021 at Cedar Crest College's Nursing Hamilton Boulevard Building. Due to the SARS-CoV-2 pandemic, there will be a limited audience; however, the project will be streamed on Microsoft Teams to Cedar Crest College graduate faculty and present DNP student registered nurse anesthetists. A dissemination poster was created to showcase the projects concepts and outcomes. In addition, a Microsoft PowerPoint presentation was created to help guide the dissemination presentation and help visualize more complicated concepts.

At the organizational level, the projects outcomes will be shared with anesthesia leaders at Lehigh Valley Hospital in Allentown, PA. Dissemination and feedback from hospital leaders and stakeholders promotes project sustainability. Educational leaders at Lehigh Valley Hospital

have expressed interest in utilizing the SBE module as a way to educate their anesthesia staff.

Throughout the project, there have been meetings with Lehigh Valley Hospital educational

leaders regarding using this project as a continuing educational course, and granting staff class A

continuing education credits to CRNA's who complete the module. However, given the

unforeseen restrictions and time constraints of the SARS-CoV-2 pandemic, a new plan was

generated to educate staff after the project was completed.

Future Implications

Once considered only a tool in the education realm, the use of SBE now has many uses in

healthcare. This project has the ability to serve as a template for future SBE DNP best practice

projects. According to The Joint Commission (2017), a standardized communication tool or

pneumonic is vital to patient safety and ensure pertinent patient information is shared during the

handoff period. This project also serves as an educational tool for healthcare professionals

needing education on patient safety and prioritization during the handoff transition.

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Appendix A

Evidence Level and Quality Guide

Evidence Levels	Quality Ratings
Level I Experimental study, randomized controlled trial (RCT) Explanatory mixed method design that includes only a level I quaNtitative study Systematic review of RCTs, with or without meta-analysis	**QuaNtitative Studies** **A High quality**: Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence. **B Good quality**: Reasonably consistent results; sufficient sample size for the study design; some control, fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence. **C Low quality or major flaws**: Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn.
Level II Quasi-experimental study Explanatory mixed method design that includes only a level II quaNtitative study Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis **Level III** Nonexperimental study Systematic review of a combination of RCTs, quasi-experimental and nonexperimental studies, or nonexperimental studies only, with or without meta-analysis Exploratory, convergent, or multiphasic mixed methods studies Explanatory mixed method design that includes only a level III quaNtitative study QuaLitative study Meta-synthesis	**QuaLitative Studies** No commonly agreed-on principles exist for judging the quality of quaLitative studies. It is a subjective process based on the extent to which study data contributes to synthesis and how much information is known about the researchers' efforts to meet the appraisal criteria. *For meta-synthesis, there is preliminary agreement that quality assessments of individual studies should be made before synthesis to screen out poor-quality studies[1].* **A/B High/Good quality** is used for single studies and meta-syntheses[2]. The report discusses efforts to enhance or evaluate the quality of the data and the overall inquiry in sufficient detail; and it describes the specific techniques used to enhance the quality of the inquiry. Evidence of some or all of the following is found in the report: • Transparency: Describes how information was documented to justify decisions, how data were reviewed by others, and how themes and categories were formulated. • Diligence: Reads and rereads data to check interpretations; seeks opportunity to find multiple sources to corroborate evidence. • Verification: The process of checking, confirming, and ensuring methodologic coherence. • Self-reflection and scrutiny: Being continuously aware of how a researcher's experiences, background, or prejudices might shape and bias analysis and interpretations. • Participant-driven inquiry: Participants shape the scope and breadth of questions; analysis and interpretation give voice to those who participated. • Insightful interpretation: Data and knowledge are linked in meaningful ways to relevant literature. **C Low quality** studies contribute little to the overall review of findings and have few, if any, of the features listed for high/good quality.

Appendix B

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	5.73	15	1.163	.300
	Posttest	8.13	15	.915	.236

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pretest & Posttest	15	.371	.173

Paired Samples Test

			Paired Differences					
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df
Pair 1	Pretest - Posttest	-2.400	1.183	.306	-3.055	-1.745	-7.856	14

Paired Samples Test

		Sig. (2-tailed)
Pair 1	Pretest - Posttest	.000

Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate	95% Confidence Interval Lower	Upper
Pair 1	Pretest - Posttest	Cohen's d	1.183	-2.028	-2.916	-1.118
		Hedges' correction	1.216	-1.973	-2.837	-1.087

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation of the mean difference.

Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

Appendix C – DNP Essentials

DNP Essential	Linkage to DNP Essentials
Essential I: Scientific Underpinnings for Practice	DNP essential I was first met with a literature review on best handoff practices. The literature review was appraised for inclusion. A PICO question was then created and presented to the graduate faculty at Cedar Crest College. Evidence was then reviewed and evaluated using existing EBP material. The PICO question was refined, which then lead to a synthesized literature review.
Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking	DNP essential II was first met pre pandemic with interaction with anesthesia providers and PACU nurses. A needs assessment was conducted and determined there was a need to improve communication between the two departments. Staff were introduced to a handoff tool at a quality improvement meeting. Stakeholders and mentors were identified and met with consistently throughout the project. A budget was planned and reviewed.
Essential III: Clinical Scholarship and Analytical Methods for EBP	DNP essential III with first met with the submission of a DNP project proposal. Following submission, an IRB proposal was constructed and submitted. The IRB proposal was then revised and resubmitted following the recommendation from the IRB. Following approval, the DNP project was implemented over a 4-week implementation phase. Succeeding the projects implementation, data was collected and analyzed. A dissemination poster was created and disseminated to faculty at the school. In addition, a professional portfolio created along the way to showcase DNP proposals, manuscripts and specific items form coursework that demonstrated AACN DNP essentials.

Essential IV: Information Systems Technology and Patient Care Technology for the Improvement and Transformation of Healthcare	DNP essential IV was met by the development and design of a web page training module. The mobile application was designed to increase knowledge of anesthesia providers. The online accessible module allowed our DNP group to implement our project remotely as well as allowed myself to participate in health information technology as a team member. DNP essential IV was also met by our groups ability to extract data from our pre- and post-module survey
Essential V: Healthcare Policy and Advocacy	DNP essential V was met by advocating for a new policy regarding patient handoff which can lead to more effective team communication and a decrease in information lost resulting in better patient outcomes and a reduction in sentential events.
Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes	This project specifically looks to improve team collaboration and communication between anesthesia providers and PACU nurses. Throughout the entire project mentors, preceptors, and stakeholders were met with to address interprofessional communication and collaboration regarding the patient handoff process. Furthermore, there was collaboration as a DNP team for the development, design, and implementation of this project.
Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health	DNP essential VII was met by educating about the use of a standardized handoff tool to improve interdisciplinary communication and reduce errors in communication while promoting continuity of care.
Essential VIII: Advanced Nursing Practice	DNP essential VIII was met by evidence analysis, data synthesis, presentation of data findings, and assessment of information impact post presentation.

Appendix D

1. **Which multimodal intervention for spine surgery has demonstrated the property of reducing spinal cord edema?**
A. Ketamine
B. Toradol
C. Lidocaine
D. Dexmedetomidine

2. **Select all appropriate interventions when performing ERAS for spine surgery. (Select 3)**
A. 15mg of Toradol at the end of surgery
B. N2O to enhance depth of anesthesia
C. Scheduled oxycodone for postoperative pain management
D. TIVA with propofol
E. Ketamine 0.25 mg/min infusion
F. Carbohydrate loading 6 hours before surgery

3. **During the intraoperative phase of anesthesia care, the primary objective of ERAS for spine surgery is to...**
A. Limit the amount of narcotics that we administer to patients
B. Reduce the overall surgical stress response
C. Promote early oral intake and ambulation after surgery
D. Maximize physical and functional status

4. **You are with your student as they are having difficulty intubating. Which action and response would be most effective?**
A. You stop them immediately and take over the procedure stating, "you need more practice before I let you try this on a person again."
B. You assess the situation to determine the cause of the difficulty and say, "o.k. You have time. What do you see? What can we change to help you have a better view?"
C. Joke with the patient to try to decrease the tension and redirect the attention away from the student to ease anxiety.
D. Take over for the student and state, "don't worry, it gets easier."

5. **You meet with your student for the first time in the morning before surgery. You discuss the day, the cases, and any questions the student might have. The student, in turn, feels at ease going into the day and confident in their preparation. This type of communication is known as…**
A. Assertive Communication
B. Validation
C. Therapeutic Communication
D. Verbal Communication

6. **It is the end of the day and your student hands you their evaluation for the day. The most appropriate action is…**

A. Take the evaluation and fill it out at a later date
B. Tell the student they did a good job today and for them to put the evaluation in your mailbox
C. Sign your name on the bottom and tell the student to fill out the rest
D. Sit down with the student and discuss the pros and cons for the day, giving them feedback both verbally and on the evaluation

7. The use of structured or standardized template
A. Is not necessary because the receiver can look up all the information before
B. Aids in delivering a faster handoff
C. Should only be utilized when the patient is an ASA 3 or higher
D. Ensures consistency in information communicated between the sender and receiver.

8. What does the I-PASS acronym stand for?
A. I: Illness severity P: Patient summary A: Action list S: Situation awareness and contingency planning S: Synthesis by receiver
B. I: Introduction P: Positioning during surgery A: Antibiotics S: Summary of anesthetics S: Summary of Fluids
C. I: Introduction P: Patient Summary A: Antibiotics S: S: Summary of anesthetics S: Summary of Fluids
D. I: Illness severity P: Positioning during surgery s A: Action list S: Summary of anesthetics S: Synthesis by receiver

9. The IPASS handoff system has been shown to
A. Increase efficiency
B. Decreases time spent during handoffs
C. Decrease medical errors and near misses
D. All of the above