

**Operating Room to Post Anesthesia Care Unit: Introduction of a Standardized Checklist
to Facilitate Patient Handoff**

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Notes from the Author

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I would like to dedicate this to my wife Megan and my daughters Sadie and Hazel. Your unconditional love, support, and sacrifices have allowed me to chase my dreams. I am forever grateful.

Abstract

The post anesthesia care unit is a dynamic environment and post-operative handoff reports are challenged by interruptions and time constraints. This can result in poor communication and the incomplete transfer of vital information which have the potential to harm patients. Poor or failed patient handoff reports have long been identified as potential sources of communication errors that may result in adverse patient outcomes. The purpose of this Doctor of Nursing Practice project was to assess anesthesia providers' and PACU nurses' perceptions of adequacy of the SBAR for Anesthesia Handoff Checklist. This quality improvement project was conducted at a large, Level I trauma center located in the southeastern United States. It utilized a pre- and post-survey design to complete a single Plan, Do, Study, Act cycle to assess user perceptions of a standardized handoff checklist among a nonrandomized convenience sample of CRNAs and PACU nurses who volunteered to participate in the project. Post-intervention survey responses to questions regarding ease of use, efficiency of organization, level of enthusiasm, and comprehensiveness of the SBAR for Anesthesia Handoff Checklist revealed that while perceptions of the checklist tended to be positive, participants were not overly enthusiastic.

Keywords: handoff, checklist, CRNA, PACU

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Section I. Introduction

Background

The Joint Commission (2017) defines a handoff as the “transfer and acceptance of patient care responsibility achieved through effective communication” (p. 2). It involves the transfer of specific information by both a sender and receiver as a means to secure both the continuity and safety of patient care. Communication, central to an effective handoff, can be verbal, nonverbal, or written, and involves the exchange of information between a sender and a receiver (Ross, 2018). Ineffective or inadequate communication during handoffs can lead to adverse patient outcomes or even sentinel events (Joint Commission, 2017).

External factors such as interruptions and distractions, due to things like noise or music, have been identified as barriers to effective communication during patient handoff (Gibney et al., 2017; Joint Commission, 2017). Additionally, internal factors with the potential to contribute to ineffective handoff communication include stress, fatigue, and illness (Gibney et al., 2017).

Approximately 80% of medical errors during patient handoffs are associated with a breakdown in communication during patient handoffs (Leonardsen et al., 2019). The post anesthesia care unit (PACU) is a dynamic environment and post-operative handoff reports are challenged by interruptions and time constraints which can result in poor communication and the incomplete transfer of vital information which have the potential to harm patients. Delays in treatment, unnecessary treatment, increased length of hospital stay, and increased costs have all been associated with miscommunication during the handoff process.

Poor or failed patient handoff reports have long been identified as contributing causes of communication errors that may result in adverse patient outcomes. The Joint Commission (2017) first addressed the importance of handoff communication in 2006 with the establishment of a

national patient safety goal, which went on to become a standard of care in 2010. Currently the Joint Commission, the American Association of Nurse Anesthetists (AANA, 2014), the Anesthesia Patient Safety Foundation (APSF, 2020), and the Institute for Healthcare Improvement (IHI, 2020a) all support the use of a standardized handoff process by endorsing the use of checklists, forms, and mnemonic aids. In fact, the AANA has a Standard of Care that Certified Registered Nurse Anesthetists (CRNAs) must adhere to which addresses the patient handoff process. A recent meta-analysis by Keebler et al. (2016) found that standardized handoff protocols, regardless of type, improve communication and positively affect patient outcomes through a decrease in preventable events.

Organizational Needs Statement

The partnering facility for this quality improvement project is a large, Level I trauma center located in the southeastern United States. Despite the introduction a decade ago of regulatory guidance and practice guidelines that advocate the use of standardized handoffs, and unlike other areas of this facility which have formal policies addressing patient handoffs from registered nurse (RN) to RN, use of a standardized handoff checklist is not a part of current practice or policy when CRNAs transfer patients from the operating room (OR) to the PACU. While many CRNAs use a systematic reporting process, the use of a standardized checklist is not required. Using a standardized handoff checklist when transferring a patient from the OR to the PACU would better align the department with professional organizations such as the AANA (2014), the APSF (2020), and the IHI (2020a), which all support the use of communication strategies to improve the efficiency, quality, and safety of health care delivery.

Problem Statement

Patient handoff reports from CRNAs to PACU RNs in this facility currently vary from provider to provider as each uses their own preferred reporting model, often relying on memory, which the literature has demonstrated can lead to errors of omission.

Purpose Statement

This Doctor of Nursing Practice (DNP) project will assess anesthesia providers' and PACU nurses' perceptions of adequacy of the SBAR for Anesthesia Handoff Checklist. The goal is to gain a better understanding of CRNA and PACU RN perceptions of this method in order to assess its usefulness as a handoff checklist in the transfer of patient care. It is anticipated that knowledge gained from this project can be used in future quality improvement and policy efforts aimed at improving communication between providers and through standardization of the handoff process at this facility.

Section II. Evidence

Literature Review

A literature search of articles published between 2015-2020 was conducted using PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, East Carolina University Libraries' One Search tool, and Google Scholar to identify current evidence regarding standardized methods employed to facilitate the transfer of patient care from the OR to the PACU. A detailed search strategy, including keywords, PubMed MeSH terms, and CINAHL subject headings, can be found in Appendix A. This search strategy returned a total of approximately 420 articles. After elimination of duplicates and items not germane to the project, 67 unique articles were identified for further review. From this set of articles, a total of 10 were related to patient handoff in post-anesthesia units or critical care units. These articles are included in the summary of literature matrix located in Appendix B. Additionally, pertinent websites and practice guidelines of professional organizations related to both anesthesia and patient safety were reviewed for further resources.

Current State of Knowledge

The rating system for the hierarchy of evidence developed by Melnyk and Fineout-Overholt (2019) was used to assign a level of evidence to each article used in support of this quality improvement project. A description of this rating system is located in Appendix C. While numerous quality improvement projects were found within the literature, there was a noticeable absence of high-level evidence from well-designed controlled trials (with or without randomization), well-designed case control studies, and cohort studies.

Current Approaches to Solving Population Problem

A review of current literature identified several different handoff tools and mnemonics that have been studied and implemented by health care organizations to facilitate patient transfer from the OR to either the PACU or to the ICU. Halladay et al. (2019) used an electronic medical record checklist to standardize handoff processes in the PACU and reported a significant increase in the percent of accurate information transferred. Bruno et al. (2017) and Burns et al. (2018) each reported on the development of department specific checklist tools that reduced the number of errors and omissions that occurred during patient transfer and improved PACU RN satisfaction in the handoff process. Jelacic et al. (2021) developed an aviation style checklist for use on a tablet or computer that increased the communicated number of checklist items deemed important to an effective handoff.

Evidence to Support the Intervention

This project introduced the use of the SBAR (situation, background, assessment, recommendation) for Anesthesia Handoff Checklist to facilitate patient transfer from the operating room to the PACU. Funk et al. (2016) used a modified SBAR (ISBARQ; I=introduction; Q=questions) to establish a structured handoff in a pediatric PACU. Use of the tool led to a statistically significant increase in the number of items discussed during handoff as well as a significant increase in provider satisfaction without a statistically significant increase in the duration of the handoff. Halterman et al. (2019) introduced SBAR as part of a quality improvement initiative in the PACU and reported a decrease in omitted information as well as an 80% use of the checklist 12 weeks post intervention. Lastly, Leonardsen et al. (2019) found use of the ISBAR tool had a positive impact on user (both giver and receiver) perception of the

handoff experience, as it related to the logical structure of the handoff process as well as the communication of relevant information.

The decision to use the SBAR for Anesthesia Handoff Checklist was also influenced by the fact that a generic SBAR tool is well known and is commonly used by nurses at this facility to give report on the ICU or general floors and within the anesthesia department, although standardized checklist is not used. A systematic literature review of English language articles on handoffs found SBAR, at 70%, was overwhelmingly the most frequently cited handoff mnemonic (Riesenberg et al., 2019). In addition to being supported by literature as a tool that can facilitate the accurate transfer of relevant information while not increasing the time to complete the patient handoff process, previous familiarity with SBAR has the potential to ease adoption of use in the PACU environment.

Evidence-Based Practice Framework

The Theory of Reasoned Action (TRA) was utilized to guide this DNP project. The TRA is a theory on general behavior that was first developed in 1967 by Martin Fishbein, and later expanded upon by Fishbein and Icek Ajzen (Fishbein & Ajzen, 1975). The TRA has been used to predict behaviors related to people's perceptions, beliefs, and attitudes. The purpose of this DNP project was to explore the perceptions, beliefs, and attitudes held by CRNAs and PACU RNs regarding the use of a patient handoff tool.

Many patient handoff checklists exist to aid in the successful and safe transfer of patient responsibility and data to others. The TRA model suggests that existing attitudes, beliefs, or perceptions impact the anesthesia provider's decision to use any of the various proven handoff tools. Behavioral influences can come from within, the result of past personal experiences, or from external sources.

An attitude is a mental state involving one's beliefs, feelings, thoughts, and influences that dictates how an individual may act or behave in certain situations. CRNAs and PACU RNs have varied educational backgrounds and clinical experiences which then contribute to individual perspectives and attitudes. Subjective norms are an individual's perception of social or cultural norms exerted by peers, family, friends, or co-workers regarding the behavior in question. Together, attitudes and subject norms may contribute to a provider's decision to use a handoff tool. Using the TRA as a framework, this DNP project attempted to better understand if CRNA perceptions, in combination with existing organizational culture, presented barriers to the future use of a standardized postoperative handoff tool.

Ethical Consideration & Protection of Human subjects

This quality improvement project was deemed exempt from full review through a collaborative process involving the East Carolina University and Medical Center Institutional Review Board and the partnering organization (Appendix D). As the primary investigator, and prior to the beginning of this project, I completed the Collaborative Institute Training Modules on research ethics and compliance in October of 2020.

This project did not involve patients, or patient information, and participation was limited to CRNAs and PACU RNs working in the participating organization who volunteered to be part of the study. There was no more than minimal risk associated with the project as the information and processes implemented fell within the usual practice of the participants and the partnering organization. Identified risks included the potential for some additional stress and increased time demands on participants created by the using a new, unfamiliar, and more structured method of giving bedside report.

Section III. Project Design

Project Site and Population

Description of the Setting

This quality improvement project was conducted in the adult PACU of a 950 bed, Level I trauma center located in the southeastern United States where more than 32,000 procedures requiring anesthesia are performed annually. In this PACU, post-operative patients undergo phase I of their recovery before being transferred to either another recovery unit prior to planned discharge, or to their inpatient hospital room.

Project Facilitators

The project was conducted at a facility with a busy OR and PACU which should have allowed for ample opportunity to use the handoff checklist. Pre-existing faculty relationships with clinicians aided in the recruitment of willing participants and had the potential to translate to consistent use of the handoff tool during the data collection period. Additionally, as the SBAR for Anesthesia Handoff Checklist is a modification of the SBAR tool commonly used to give bedside report from RN to RN, familiarity with this method had the potential to aid in ease of use.

Project Barriers

Prior to implementation, observed handoff practices in this facility were not standardized and varied from CRNA to CRNA. Additionally, there did not seem to be an impetus among either CRNAs or PACU RNs for changing the handoff process. Therefore, resistance to change with the introduction of a new standardized handoff checklist was viewed as the largest potential obstacle for this project and a barrier to consistent use of the handoff checklist during data collection.

Description of the Population

The population involved in this quality improvement project included both CRNAs and PACU RNs employed in the participating facility. CRNAs are advanced practice registered nurses trained to practice in any setting in which anesthesia is delivered. At this facility CRNAs work autonomously and in collaboration with anesthesiologists to provide patients with anesthesia care throughout the perioperative period. Following their surgery or diagnostic procedure, patients are brought to the PACU and care is transferred to a PACU RN who continues to monitor the patient to ensure they have a safe recovery from anesthesia.

Project Team

The project team consisted of a Student Registered Nurse Anesthetist (SRNA) as the primary investigator and three university faculty members. Faculty members brought a wealth of knowledge and expertise to the project. One CRNA faculty member served as project chair, providing a bridge from research theory to clinical practice. Another, a CRNA clinical faculty member, was instrumental in assisting with the implementation of the project through recruitment of participating CRNAs and PACU RNs as well assisting with facility and IRB approval. The third, a non-CRNA faculty member, provided guidance regarding research, design, IRB approval, implementation, and writing throughout the project. Project implementation was also aided greatly by the cooperation of the PACU unit manager as well the PACU nursing staff. Lastly, although the primary investigator implemented the project independently, development of the project was a collaborative effort with three SRNA classmates who also implemented similar projects of their own.

Project Goals and Outcome Measures

Description of the Methods and Measurements

This quality improvement project utilized a pre- and post-survey design to complete a single Plan, Do, Study, Act (IHI, 2020b) cycle to assess user perceptions of the adequacy of standardized handoff checklist among a nonrandomized convenience sample of CRNAs and PACU nurses who volunteered to participate in the project. CRNAs and PACU RNs were approached by a clinical CRNA faculty member and asked to volunteer to participate in a DNP project exploring the use of a standardized handoff checklist. CRNAs agreeing to participate were then sent an email containing a Qualtrics link to a pre-intervention survey (Appendix E), a short video (transcript in Appendix F) which introduced and explained their anticipated role in the project, and a copy of the SBAR for Anesthesia Handoff Checklist (Appendix G). During the intervention phase, each CRNA provided the PACU RN receiving bedside report with the post-intervention survey (Appendix H). Lastly, at the end of the data collection period participating CRNAs were emailed a post-intervention Qualtrics survey (Appendix E).

Discussion of the Data Collection Process

The pre- and post-intervention Qualtrics surveys completed by CRNAs, and the printed post-intervention surveys completed by PACU RNs, contained a mixture of yes/no, Likert-type scale, and open-ended, free response style questions designed to gather data to better understand participants' perceptions regarding the use of the SBAR for Anesthesia Checklist to facilitate patient handoff. Pre- and post-intervention data were collected from April 15-May 25, 2021. PACU RN post-intervention surveys were deposited by the PACU RNs into a locked storage box located on the unit and collected at the end of each week. Each participating CRNA was emailed

an anonymous post-intervention Qualtrics survey at the end of the data collection period. Responses were not linked to names to protect the confidentiality of the participants.

Implementation Plan

After consenting to participate, each CRNA electronically received a video introducing them to the project that included instructions on how the project was to be implemented. Prior to implementation each CRNA completed a pre-intervention Qualtrics survey. Beginning on the agreed upon date, each participating CRNA used the SBAR for Anesthesia Checklist to facilitate each patient transfer to the PACU over a two-week period. At the end of the two-week period the CRNAs were emailed and completed anonymous post-intervention Qualtrics surveys, and the cards completed by the PACU RNs were collected from the locked storage box.

Timeline

Work on this project began in the fall of 2020 with topic exploration through review of pertinent literature, selection and adaptation of the selected tool, and initial planning for approval through the IRB process. The project was implemented, and data collection occurred in the spring of 2021. Data analysis and dissemination of findings occurred in the summer/fall of 2021. A detailed timeline kept during the course of the project-can be found in Appendix I.

Section IV. Results and Findings

Results

Pre-intervention surveys were emailed to the five participating CRNAs on April 15, 2021. There was a 100% response rate, with responses received between April 15-26, 2021. The pre-survey questions assessed participating CRNA perceptions regarding their current handoff process. Additionally, responses to the pre-intervention survey confirmed that the same standardized handoff tool/checklist/mnemonic was not currently being used by all anesthesia providers at the participating facility.

Use of the SBAR for Anesthesia Handoff Checklist and data collection began on April 19, 2021 and continued until May 6, 2021. Data collection was extended into a 3rd week (18 days total instead of the planned 14 days) to accommodate for CRNA scheduling (vacation, offsite assignments) away from the main OR, however, individually each CRNA only used the SBAR for Anesthesia Handoff Checklist for a total of 14 days. During this time a total of 49 PACU RN surveys were collected from the locked storage box in the PACU. At the end of the data collection period, post-intervention surveys were emailed to each of the five participating CRNAs. There was a 100% response rate for this survey as well, with responses received between May 15-25, 2021.

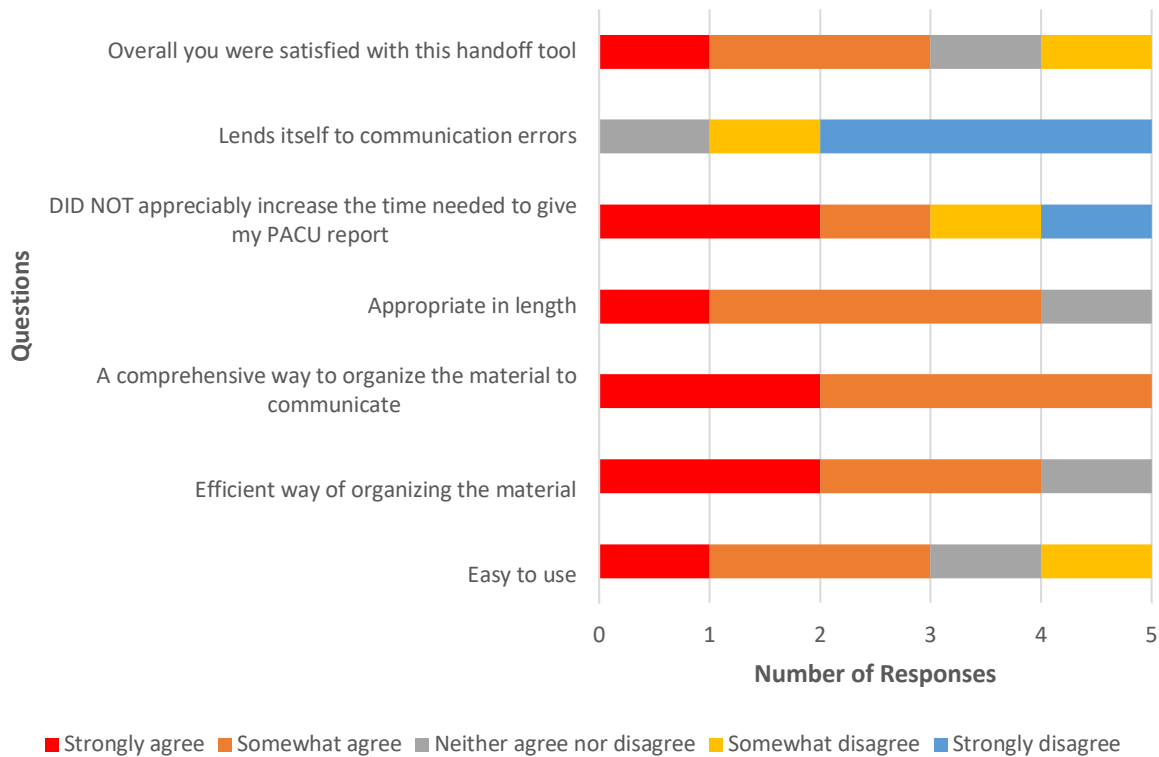
Participants reported using the SBAR for Anesthesia Handoff Checklist a total of 49 times, however, one participant did not answer this survey question. Most found the SBAR for Anesthesia Handoff Checklist to be appropriate in length, easy to use, a comprehensive and efficient way to organize material to communicate report, and that it did not lend itself to communication errors. Results were mixed regarding the impact on the time needed to give report. Three participants either strongly or somewhat agreed and two somewhat or strongly

disagreed with the statement that the checklist did not increase the time needed to give PACU report. Participant response was also mixed when asked about overall satisfaction with the tool, as three either strongly or somewhat agreed, one neither agreed nor disagreed and one somewhat disagreed.

Analysis

All CRNA participants somewhat or strongly agreed that they were satisfied with their current handoff process, that it was comprehensive, and that it provided an efficient way to transfer information. In spite of this satisfaction, however, pre-intervention participant responses regarding perceived risk of communication errors with their current handoff process were mixed, with three strongly disagreeing and two somewhat or strongly agreeing that their process lends itself to communication errors.

Post-intervention survey responses to questions regarding ease of use, efficiency of organization, level of enthusiasm, and comprehensiveness of the SBAR for Anesthesia Handoff Checklist revealed that while CRNA perceptions of the checklist tended to be positive, participants were not overly enthusiastic (Figure 1).

Figure 1*CRNA Post-Intervention Likert-type Responses (n=5)*

In addition to Likert-type scale questions, the post-intervention surveys included three open response questions. Responses to these questions offer potential explanations for the reported lack of enthusiasm. When asked to comment on why they would/would not like to adopt this tool into their personal anesthesia practice one participant stated that the checklist was “so long that the PACU RNs lost interest and ignored me,” one would not adopt the checklist because “the physical card was too cumbersome to carry around,” while two others said that they were already using a similar method to give report but just not organized like the SBAR for Anesthesia Handoff Checklist.

When asked to comment on any barriers that would prevent them from adopting a standardized handoff checklist, one participant cited having to keep up with a physical copy of

the checklist, while another reported that they already have an effective way to give report without the use of a checklist. Only two participants responded when asked to describe anything they would change about the handoff checklist. One participant suggested removing the patient destination question as that is information that the CRNA may or may not possess. Another participant responded to the question with the following: “The success of this tool is directly related to the PACU nurse actually listening to what you are reporting. I had several ask me questions after I had rerouted [sic] in same said question. So, if they are not listening not only are reporting technique useless, but their assessment of it will be inaccurate.” While this is not a suggestion for a specific change to the handoff checklist, the participant’s response was included because it highlights a dynamic that exists when giving a bedside report of any kind.

The third component of this project was a survey filled out by PACU RNs after taking report from a CRNA using the SBAR for Anesthesia Handoff Checklist. A total of 49 of these surveys were returned. Table 1 contains PACU RN responses to yes/no survey questions. PACU RNs reported that information vital to bedside report was given at a rate of nearly 100%. PACU RNs also reported that major concerns with the potential to affect patient care were addressed in 71% off handoffs, while they estimated essential information was missing from report in 17% of encounters. Lastly, 63% of PACU RNs reported that they would like to see the SBAR for Anesthesia Handoff Checklist used in the future.

Table 1*PACU RN Survey Responses*

Question	n	Yes %	No %	N/A %
Was the patient identified	49	100%	0%	0%
Allergies	49	100%	0%	0%
Antibiotics	49	90%	10%	0%
Intake/Output	49	100%	0%	0%
EBL	49	98%	2%	0%
Pain Management	49	100%	0%	0%
Nausea management	49	98%	0%	2%
Where any major concerns that might affect PACU care addressed	49	71%	18%	10%
After the transfer was finished, did you find there was essential information missing from the report	47	17%	83%	
Would you like to see this particular handoff checklist used in the future	46	63%	37%	

PACU RN responses to Likert-type scale questions in the survey (Table 2) were similar to those of CRNA participants, as the majority of PACU RNs also found the SBAR for Anesthesia Checklist contributed to both an efficient and comprehensive handoff process. Additionally, and in contrast to participating CRNAs, the majority of PACU RNs felt that use of the SBAR for Anesthesia Handoff Checklist did not increase the time needed to receive report.

Table 2*PACU RN Likert-type Responses*

Question	n	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Using this tool contributed to an efficient handoff	47	19%	55%	21%	2%	2%
Using this tool contributed to a comprehensive handoff	47	19%	60%	17%	2%	2%
Using this tool did not increase the time needed to receive PACU report	47	19%	57%	17%	4%	2%

Section V. Interpretation and Implications

Cost Benefit Analysis

Expenses incurred to implement the project were minor, including photocopying and laminating the SBAR for Anesthesia Handoff Checklist used by each CRNA, the photocopying of the PACU RN surveys, and the cost of the locked box used to collect the PACU RN surveys. The total cash outlay for the project was approximately \$50 (U.S.). The use of the anonymous Qualtrics surveys was free via a license with East Carolina University. There was no fee charged for IRB approval by the participating facility.

This quality improvement project was designed to assess CRNA and PACU RN perceptions of the adequacy of a standardized handoff tool. As such, there is no measurable direct or indirect monetary benefit that can be attributed to the project. Additionally, the participating facility bore no monetary cost for this quality improvement project. While there is a potential reduction in cost associated with quality improvement, this metric was not part of the scope of this project. The participating facility did, however, get the benefit of seeing the results of the project, which could potentially impact future handoff-related quality improvement projects or policy decisions.

Resource Management

The success of this project is a reflection of the hard-working CRNAs and PACU RNs who agreed to participate. Additionally, the busy OR and PACU allowed adequate opportunity to use the handoff tool. There were no additional organizational resources, either present or lacking, that were a barrier to this project.

Implications of Findings

Both CRNAs and PACU RNs reported that the SBAR for Anesthesia Handoff Checklist contributed to both an efficient and comprehensive handoff report. Data collected suggests that use of the checklist resulted in a high rate of transfer of vital information important to patient care. These results are similar to studies on standardized handoff processes found in the literature and are why the use of standardized handoff protocols to improve communication is supported by the AANA (2014), the APSF (2020), and the IHI (2020a).

Using the TRA as a framework, this DNP project attempted to better understand if CRNA perceptions, in combination with existing organizational culture, presented barriers to the future use of a standardized postoperative handoff tool. While the sample size from this project is decidedly small, based on responses from participating CRNAs and PACU RNs there do not appear to be any existing barriers at the participating facility that would preclude the permanent introduction of this or a similar standardized handoff tool.

Implications for Patients

The implication for patients is that the use of a standardized handoff tool is an efficient and comprehensive way to give report. Although not studied in this quality improvement project, standardized handoff tools improve communication and have been demonstrated to positively affect patient outcomes through a decrease in preventable events.

Implications for Nursing Practice

When communication is improved during the transition of care, errors can be prevented. Through a structured, repeatable and consistently used handoff tool, vital information can be given to the PACU RN so that he or she can better anticipate the patient's pain management and care needs. Use of a standardized handoff tool reduces the number of errors and omission that

occur during patient handoff and has been demonstrated to improve PACU RN satisfaction with the handoff process.

Sustainability

Given the low cost to implement this project, and the potential large cost of adverse patient outcomes associated with breakdowns in communication, the participating organization could easily afford to study and implement a standardized handoff tool in the future. This quality improvement project examined CRNA and PACU RN perceptions of a standardized handoff tool using a relatively small number of CRNAs more similar to a pilot project. A similar quality improvement project could easily be expanded using a larger number of CRNAs and the utilization of multiple Plan, Do, Study, Act cycles to create a more customized SBAR for Anesthesia Handoff Checklist that would perhaps better fit the needs of the organization.

Dissemination

A poster and oral presentation of the results of this quality improvement project were shared with fellow SRNAs, faculty, and project stakeholders via both an in-person presentation as well as a synchronous Zoom meeting in the fall of 2021. The Zoom format was chosen in order to comply with East Carolina University restrictions on face-to face meetings enacted as a result of the ongoing COVID-19 pandemic. All project participants were made aware of the date and time in advance of the presentation but were not required to participate. Additionally, this paper was uploaded to The Scholarship, an online digital archive that contains intellectual output of East Carolina University's faculty, staff, and students.

Section VI. Conclusion

Limitations

Several limitations were identified in this DNP project. The first limitation was sample size. This was affected by both the number of participating CRNAs and the time constraint of a two-week data collection period. A small sample size can affect the reliability of the survey results and may lead to the introduction of bias. Another limitation to the study is that use of the SBAR for Anesthesia Handoff Checklist was not directly observed during this project, and survey results relied on the subjective recall of the participating CRNAs and PACU RNs. This also has the potential for the introduction of bias in the results.

Recommendations for Others

This quality improvement was more similar to a pilot project in scope but designed in a manner in which the primary investigator had the opportunity to gain firsthand knowledge and experience with each step of the research process. An extension of this project with a larger group of CRNAs and a longer implementation period would offer the opportunity for more robust data collection. Additionally, the involvement of CRNAs and PACU RNs at the beginning of a similar project would allow for the opportunity to customize and implement a handoff checklist that would perhaps be better suited to the needs of the organization. Additionally, there was some feedback that the size of the actual laminated checklist given to the CRNAs to use during handoff report was too large. The laminated copy measured 8" x 4", and although each CRNA was given also given an electronic copy of the checklist, future projects should consider carefully the size of the checklist.

Recommendations for Further Study

In addition to the above recommendations, there are two issues that could be addressed in future quality improvement or research projects on this topic. The recommendation would be to design the project so that, if possible, an unbiased observer is present for patient handoffs. This would eliminate complete reliance on subjective participant recall and serve to strengthen data collection. For example, an impartial observer could physically time patient handoffs before and after implementation of the handoff checklist. This would provide a more accurate assessment as to whether the use of a checklist increases the time needed to conduct handoff report. Additionally, the observer could in real time assess and record adherence to items on the handoff checklist which would eliminate the potential introduction of bias into this part of the data collection process.

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Appendix A
Search Strategy

Table A1

Keywords, PubMed MeSH and CINAHL Subject Heading Used for Literature Search

Concept	Patient Handoff	Setting
Keywords	Patient handoff	Post anesthesia care unit
	Clinical handoff	Operating Room
	Nursing handoff	Recovery room
PubMed MeSH	Patient handoff	Operating rooms
		Recovery room
		Anesthesia
CINAHL	Hand off (Patient Safety)	Post anesthesia care units
		Operating rooms

Note. Various combinations of the listed keywords, PubMed MeSH terms, and CINAHL subject headings were used to conduct literature searches in PubMed, CINAHL, ProQuest Search, East Carolina University OneSearch, and Google Scholar. Boolean operators were used in different combinations to obtain the reported search results. Results limited to articles published from 2015-2020.

Table A2

Search Strategy

Search date	Database or search engine	Search strategy	Limits applied	Number of citations found/kept
09/11/2020	PubMed	(patient handoff OR Nursing handoff OR clinical handoff) AND (operating room OR recovery room OR anesthesia)	Last 5 years (2015-2020) English language	121/24
09/11/2020	CINAHL	(Post anesthesia care units OR Operating rooms) AND patient hand off	Last 5 years (2015-2020) Academic Journal English language	58/32
09/11/2020	ProQuest	Patient handoff tool AND post anesthesia care unit	Last 5 years (2015-2020) Scholarly Journals Peer Reviewed	120/9
09/11/2020	ECU One Search	Patient handoff tool AND post anesthesia care unit	Last 5 years (2015-2020) Journal Article	70/20

09/11/2020	Google Scholar	Post anesthesia care unit AND patient handoff tool	Last 2 years (2018-2020) First 5 pages of search results	50/10
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Appendix B
Literature Matrix

Year	Author, Title, Journal	Purpose	Design/Level of Evidence	Setting	Sample	Handoff tool	Results
2016	Keebler, J. R., Lazzara, E. H., Patzer, B. S., Palmer, E. M., Plummer, J. P., Smith, D. C., . . . Riss, R. (2016). Meta-analyses of the effects of standardized handoff protocols on patient, provider, and organizational outcomes. <i>Human Factors: The Journal of Human Factors and Ergonomics Society</i> , 58(8), 1187-1205.	To examine effects of handoff protocols on patients, providers and organizations	Meta-Analysis; 4566 unique articles screened. 36 articles included, all used pre/post intervention designs; Level 1	Articles analyzed implemented across various settings in both the hospital and clinic.	106,724 pre-protocol measurements; 97,642 post-protocol measurements	No specific tool studied; Found benefit to standardized protocols – regardless of type	Handoff protocols improve results in several areas, including the information passed, as well as patient, provider, and organizational outcomes
2017	Bruno, G. M., & Guimond, M. E. (2017). Patient care handoff in the postanesthesia care unit: A quality improvement project. <i>Journal of Perianesthesia Nursing</i> , 32(2), 125-133.	To improve patient handoff between CRNAs and PACU RNs using an evidence-based checklist	Quality Improvement; pre/post intervention observation; Level 6	251 bed acute care facility in western PA; only anesthesia to PACU handoffs observed	Convenience sample of 14 CRNAs and 7 PACU RNs; n=20 pre-intervention and n=20 post-intervention observations	Handoff Accuracy Scoring tool rated pre-intervention verbal handoffs vs. post intervention handoffs using a checklist	Department-specific handoff checklist reduced the number of omission errors that occurred during patient handoff.

Year	Author, Title, Journal	Purpose	Design/Level of Evidence	Setting	Sample	Handoff Tool	Results
2018	Burns, S., Parikh, R., & Schuller, K. (2018). Utilization of a checklist to standardize the operating room to post-anesthesia care unit patient handoff process. <i>Perioperative Care and Operating Room Management, 13</i> , 1-5.	To create, implement and evaluate the use of an institution-specific OR to PACU handoff checklist	Quality Improvement; pre/post intervention observation; Level 6	Large tertiary care center in Northeast US performing greater than 30,000 surgical procedures annually	100 PACU handoff observations-50 pre & 50 post; Roles included MDAs, CRNAs PACU RNs;	Checklist developed specific to facility	Standardized handoff associated with increased accuracy in transfer of critical information and improved PACU RN satisfaction; Handoff time increased by less than 30 seconds
2018	Funk, E., Taicher, B., Thompson, J., Iannello, K., Morgan, B., & Hawks, S. (2016). Structured handover in the pediatric postanesthesia care unit. <i>Journal of Perianesthesia Nursing, 31</i> (1), 63-72.	To establish a structured handoff in a Pediatric PACU	Quality Improvement; pre/post intervention observation; Level 6	186 bed medical center in SE US; only anesthesia to PACU handoffs observed	Convenience sample of 52 pre & 51 post implementation handoff observations; Pre/post intervention survey sent to care team members – no total given; Roles include MDA, surgeons, residents, CRNA, SRNA, APRN, PA, PACU RN	ISBARQ	Handoff led to statistically significant increase # of items discussed during handoff, a significant increase in provider satisfaction without a statistically significant increase in the duration of the handoff.

Year	Author, Title, Journal	Purpose	Design/Level of Evidence	Setting	Sample	Handoff Tool	Results
2018	Halladay, M. L., Thompson, J. A., & Vacchiano, C. A. (2019). Enhancing the quality of the anesthesia to postanesthesia care unit patient transfer through use of an electronic medical Record–Based handoff tool. <i>Journal of Perianesthesia Nursing, 34</i> (3), 622-632.	A standardized anesthesia to PACU EMR/EHR-based patient handoff checklist was implemented and evaluated for its effect on the transfer of information	Quality Improvement; pre/post intervention survey; Level 6	186 bed medical center in SE US; only anesthesia to PACU handoffs observed	20 via nonprobability, snowball sampling from a convenience sample of CRNA's	EMR/EHR-based checklist	EMR/EHR-based handoff checklist significantly increased the percent of accurate information transferred. No considerable increase in the duration of the PACU handoff process standards (AORN and TJC)
2019	Halterman, R. S., Gaber, M., Janjua, M. S. T., Hogan, G. T., & Cartwright, S. M. I. (2019). Use of a checklist for the postanesthesia care unit patient handoff. <i>Journal of Perianesthesia Nursing, 34</i> (4),	Evaluate how use of a checklist during patient handoff can decrease the omission of health information	Quality Improvement; pre/post intervention evaluation; Level 6	478 bed Level 1 Trauma Center in eastern GA; only anesthesia to PACU handoffs observed	209 pre & 174 post intervention handoff observations; Roles include CRNA, AA, MDA, Resident	PACU SBAR	Decrease in omitted information; Increase in # of completed handoffs; 80% used checklist at 12 weeks post-intervention

Year	Author, Title, Journal	Purpose	Design/Level of Evidence	Setting	Sample	Handoff tool	Results
2019	Leonardsen, A., Moen, E. K., Karlsøen, G., & Hovland, T. (2019). A quantitative study on personnel's experiences with patient handovers between the operating room and the postoperative anesthesia care unit before and after the implementation of a structured communication tool. <i>Nursing Reports (Pavia, Italy)</i> , 9(1).	Examine handoff perception pre/post use of tool; determine if different perceptions exist between giver and receiver of handoff and whether experience, age, gender associated with different perceptions	Quality Improvement; pre/post intervention evaluation; Level 6	Hospital in Norway; approx. 8000 surgical procedures annually	116 pre & 90 post intervention questionnaires; pre q. sent two weeks prior to intervention; post q. sent 6 months after intervention in place;	ISBAR	Tool had a positive impact on user (both giver & receiver) perception of handoff experience; user experience improved in relation to logical structure and the communication of relevant information
2019	Riesenberg, L. A., Leitzsch, J., & Little, B. W. (2019). Republished: Systematic review of handoff mnemonics literature. <i>American Journal of Medical Quality</i> , 34(5), 446-454.	To identify all handoff mnemonics, describe their use, and summarize outcomes data from studies using these mnemonics	Systematic literature review; Level 6	Inclusion criteria: articles focused on handoffs and including a handoff mnemonic from 1987-2008	Systematic literature review English language articles on handoffs; 2590 articles; 401 reviewed, 46 included	none	SBAR most frequently cited handoff mnemonic (70%)

Year	Author, Title, Journal	Purpose	Design/Level of Evidence	Setting	Sample	Handoff Tool	Results
2021	Jelacic, S., Togashi, K., Bussey, L., Nair, B. G., Wu, T., Boorman, D. J., & Bowdle, A. (2020). Development of an aviation-style computerized checklist displayed on a tablet computer for improving handoff communication in the post-anesthesia care unit. <i>Journal of Clinical Monitoring and Computing</i> . 35(3), 607-616.	To determine the effects of a standardized communication tool on aspects of patient handoff. Also investigated effects of tool on patient outcomes.	Quality Improvement; pre/post intervention observation; Level 6	PACU at hospital in Northwest Location (size not described in study); only anesthesia to PACU handoffs observed	Convenience sample of 209 pre & 210 post intervention handoff observations by a trained observer. Roles include CRNA, Residents, Attendings, Fellows	Aviation style checklist for use on tablet or computer	Increase in # of checklist items communicated. No significant increase time need to complete handoff; No change pre/post in PACU LOS, respiratory complications, of PONV

Note. Levels of Evidence from *Evidence-based practice in nursing & healthcare: A guide to best practice* (4th ed.) by B. M. Melnyk and E. Fineout-Overholt. Copyright 2019 by Wolters Kluwer Health.

Appendix C
Level of Evidence

Level I	Evidence from a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs)
Level II	Evidence obtained from well-designed RCTs
Level III	Evidence obtained from well-designed controlled trials without randomization
Level IV	Evidence from well-designed case control and cohort studies
Level V	Evidence from systematic reviews of descriptive and qualitative studies
Level VI	Evidence from a single descriptive or qualitative study
Level VII	Evidence from the opinion of authorities and/or reports of expert committees

Note. This classification system was used to assign a level of evidence to each article used in support of this quality improvement project. Adapted from *Evidence-based practice in nursing & healthcare: A guide to best practice* (4th ed.) by B. M. Melnyk and E. Fineout-Overholt.

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**Appendix D
IRB Approval**



**Quality Assurance/Quality Improvement Project vs. Human Research Study
(Requiring IRB approval) Determination Form**

This worksheet is a guide to help the submitter to determine if a project or study is a quality assurance/quality improvement (QA/QI) project or research study and is involving human subjects or their individually identifiable information and requires IRB approval as defined by the Health and Human Services (HHS) or Food and Drug Administration (FDA). Once completed, please email the form to the [redacted] Center for Research and Grants [redacted] (CRG).
 CRG.Quality@ecu.edu. A CRG team member will contact you with the results of their review and may request additional information to assist with their determination. The determination will be made in conjunction with the UMCIRB office.

Please contact the [redacted] CRG with any questions at 252-847-1177 or CRG.Quality@ecu.edu.

For more guidance about whether the activity meets the definition of Human Subjects Research see <https://trade.ecu.edu/umcirt/irb-faq#definitions/> or <https://www.hhs.gov/ohrp/regulations-and-policy/decision-charts-2018/index.html#1>

Project Title: Assessing anesthesia providers' perceptions of adequacy of postoperative handoff communication		
Funding Source: None		
Project Leader Name: John Purvis/Maura McAuliffe	<input type="checkbox"/> Ed.D.	<input type="checkbox"/> J.D.
	<input type="checkbox"/> M.D.	<input type="checkbox"/> Ph.D.
	<input type="checkbox"/> Pharm.D.	<input checked="" type="checkbox"/> R.N.
	<input type="checkbox"/> Other(specify):	
Job Title: ECU SRNA/ECU CRNA Faculty	Phone: [redacted]	Email: mcauliffem@ecu.edu
	Primary Contact (if different from Project Leader): John Purvis	
	Phone: [redacted]	Email: purvisj96@students.ecu.edu

Key Personnel/ Project Team members:

Name and Degree:	Department: (Affiliation if other than Vidant)	Email:
John Purvis, BSN, SRNA	ECU Nurse Anesthesia Program	purvisj96@students.ecu.edu
Maura McAuliffe, PhD, CRNA, FAAN	ECU Nurse Anesthesia Program	mcauliffem@ecu.edu

QI/QA Assessment Checklist:

Consideration	Question	Yes	No
PURPOSE	Is the PRIMARY purpose of the project/study to: <ul style="list-style-type: none"> • IMPROVE care right now for the next patient? OR • IMPROVE operations outcomes, efficiency, cost, patient/staff satisfaction, etc.? 	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RATIONALE 1	The project/study falls under well-accepted care practices/guidelines or is there sufficient evidence for this mode or approach to support implementing this activity or to create practice change, based on: <ul style="list-style-type: none"> • literature • consensus statements, or consensus among clinician team 	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RATIONALE 2	The project/study would be carried out even if there was no possibility of publication in a journal or presentation at an academic meeting. (**Please note that answering "Yes" to this statement does not preclude publication of a quality activity.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
METHODS 1	Are the proposed methods flexible and customizable, and do they incorporate rapid evaluation, feedback and incremental changes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
METHODS 2	Are patients/subjects randomized into different intervention groups in order to enhance confidence in differences that might be obscured by nonrandom selection? (Control group, Randomization, Fixed protocol Methods)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
METHODS 3	Will there be delayed or ineffective feedback of data from monitoring the implementation of changes? (For example to avoid biasing the interpretation of data)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
METHODS 4	Is the Protocol fixed with fixed goal, methodology, population, and time period?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
RISK	The project/study involves no more than minimal risk procedures meaning the probability and magnitude of harm or discomfort anticipated are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PARTICIPANTS	Will the project/study only involve patients/subjects who are ordinarily seen, cared for, or work in the setting where the activity will take place?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FUNDING	Is the project/study funded by any of the following? <ul style="list-style-type: none"> • An outside organization with an interest in the results • A manufacturer with an interest in the outcome of the project relevant to its products • A non-profit foundation that typically funds research, or by internal research accounts 	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If all of the check marks are inside the shaded gray boxes, then the project/study is very likely QI and not human subject research. Projects that are not human subject research do not need review by the IRB.

In order to assess whether your project meets the definition of human subject research requiring IRB review or may qualify as a quality improvement/assurance activity, please provide the following information:

1. Project or Study Summary:

As a separate attachment, please provide a summary of the purpose and procedures as well address all of the following:

- a) The project question/hypothesis.
- b) The project design.
- c) Any interaction or intervention with humans.
- d) A description of the methods that will be used and if they are standard or untested.
- e) Specify where the data will come from and your methods for obtaining this data -please specify who/where (i.e. CRG will provide you with the data, or someone from a specific department will provide you with the data, or you will pull it yourself).
- f) Specify what data will be used and any dates associated with when that data was originally collected (i.e Patient Name, Diagnosis, Age, Sex), *if applicable, please attach your data collection sheet.*
- g) Where will the data (paper and electronic) for your project be stored? Please specify how it will be secured to protect privacy and maintain confidentiality. For paper data, please provide physical location such as building name and room number and that it will be kept behind double lock and key. For electronic data, please provide the file path and folder name network drive where data will be stored and specify that it is secure/encrypted/password protected. If using other storage location, please provide specific details.
- h) Please specify how long data will be stored after the study is complete? (Keep in mind that data collected/generated during the course of the project that includes protected health information (PHI) should have identifiers removed at the earliest opportunity.)
- i) Please specify how the collected data will be used (internal/external reports, publishing, posters, etc.).

Please attach a summary and/or any other additional documentation describing your project

2. If the Primary purpose of your project/study is for QA/QI, have you obtained approval from the operational leader within your department or health system:

- Yes** (Please specify here whom and obtain their signature in the signature section below [redacted])
- No** (Contact the appropriate operational leader for approval.)

Please note:

- By submitting your proposed project/study for QA/QI determination you are certifying that if the project/study is established to qualify as QA/QI project, you and your Department would be comfortable with the following statement in any publications regarding this project: "This project was reviewed and determined to qualify as quality improvement by the [redacted] Center for Research and Grants."
- If you are submitting a Poster to Media Services for printing, you will need to also submit this Quality Improvement Worksheet or proof of your IRB Application and IRB Approval.
- If the [redacted] CRG determines the activity is not human subject research, then any presentation, publication, etc. should not refer to the activity as "human subject research," "exempt research," or "expedited research."
- If you would like the [redacted] CRG to verify that a project/study is not human subject research, please provide this form completed with the summary of your activity and any additional information to the [redacted] CRG at [CRG.Quality@\[redacted\]](mailto:CRG.Quality@[redacted]) and the following will be completed and returned to you for your records.

NHSR vs. HSR Determination:

- Not Human Subject Research:** The [redacted] CRG has determined that based on the description of the project/study, approval by the IRB is not necessary. Any changes or modifications to this project may be discussed with the [redacted] CRG at that time to ensure those changes do not elevate the project to human research that would need IRB approval.
- Human Subject Research:** This project/study requires review by the IRB prior to initiation. An application in the electronic IRB submission system should be submitted.

Approval Signatures:

Department (Site) Manager: [redacted] Date: 2-25-2021

VH CRG Reviewer: [redacted]

UMC/IRB Office Staff Reviewer: [redacted] Date: 3-10-21

Appendix E

CRNA Pre-Intervention Survey

1) Do you currently use a systematic way (something you do for all cases) of providing report to the PACU nurses?

Yes

No

2) Do all anesthesia providers in your Department use the same “standardized handoff tool/checklist/mnemonic” to provide report to the PACU?

Yes

No

Please mark the answer that best describes the extent to which you agree or disagree with the following statements regarding the transfer of patient care from the OR to the PACU

3) My current handoff process provides an efficient way to transferring information:

Strongly Agree Agree Neutral Disagree Strongly Disagree

4) My current handoff process provides a comprehensive way of transferring information:

Strongly Agree Agree Neutral Disagree Strongly Disagree

5) I am satisfied with the transfer of care process I currently use:

Strongly Agree Agree Neutral Disagree Strongly Disagree

6) The handoff process I currently use lends itself to communication errors:

Strongly Agree Agree Neutral Disagree Strongly Disagree

CRNA Post-Intervention Survey

1) Please estimate how many times you used the assigned handoff tool when transferring care to the PACU (over the past two weeks)? _____

Please select the answer that best describes the extent to which you agree or disagree with the following statements regarding the transfer of patient care from the OR to the PACU.

I found the SBAR for Anesthesia Handoff Tool to be:

2) Easy to use:

Strongly Agree Agree Neutral Disagree Strongly Disagree

3) An efficient way of organizing the material to communicate:

Strongly Agree Agree Neutral Disagree Strongly Disagree

4) A comprehensive way of organizing the material to communicate:

Strongly Agree Agree Neutral Disagree Strongly Disagree

5) Appropriate in length:

Strongly Agree Agree Neutral Disagree Strongly Disagree

6) DID NOT appreciably increase time needed to give my PACU report:

Strongly Agree Agree Neutral Disagree Strongly Disagree

7) Lends itself to communication errors:

Strongly Agree Agree Neutral Disagree Strongly Disagree

8) Overall, you were satisfied with this handoff tool:

Strongly Agree Agree Neutral Disagree Strongly Disagree

9) Comment on why you would/would not like to adopt **this tool** into your personal anesthesia

practice _____

10) Please describe anything you would change about the handoff tool.

11) Are there any barriers that would prevent you from adopting a standardized handoff

tool? _____

12) What is your level of enthusiasm for future use of this tool?

Strongly Enthused Enthused Neutral Not enthused Strongly not enthused

Appendix F

Transcript of Video Introducing Project to Participants

Slide 1 Hi, my name is John Purvis, and I am Student Registered Nurse Anesthetist in the Nurse Anesthesia Program at East Carolina University obtaining my Doctor of Nursing Practice Degree. I would like to begin by thanking you in advance for agreeing to participate in this study.

Slide 2 Peri-operative communication has been determined to be an important factor in preventing adverse events. National organizations such as the Joint Commission, the AANA, and the Anesthesia Patient Safety Foundation have made effective communication one of their primary goals. Poor communication has been associated with 80% of adverse or serious events, 30% of malpractice claims, and 1744 deaths in 2016.

Slide 3 The purpose of this quality improvement project is to assess anesthesia providers' and PACU nurses' perceptions of adequacy of a Patient Care Handoff Tool. It has been demonstrated in multiple perioperative studies that use of structured communication strategies decreases errors and improves communication quality, particularly during times of patient handoff. Studies suggest that during patient hand-off incomplete information is associated with increased adverse events. This quality improvement project seeks to better understand CRNA perceptions of a standardized handoff tool to facilitate patient transfer from the OR to the PACU. While I believe the tool is both brief and efficient, I am a beginning anesthesia learner in the OR and value your expertise and opinion.

Slide 4 Checklists and mnemonics are valuable tools that may be used during a patient handoff between clinicians to aid in the identification of important steps and provide a structured process to follow. A systematic literature review of English language articles on handoffs found SBAR, at 70%, was overwhelmingly the most frequently cited handoff mnemonic (Riesenberg et al., 2019). SBAR facilitates standardized communication between clinicians and supports the exchange of accurate information. The SBAR for Anesthesia Tool was created specifically for PACU handoffs by an interdisciplinary team consisting of CRNAs, PACU RNs, MDAs and QI RNs for use in a similar QI project by Halterman et al. This handoff tool is attached to this email for accessibility on your cell phone and will be printed on the handoff cards for you to hand to the PACU nurse after handoff.

Slide 5 Prior to using the SBAR for Anesthesia Handoff Tool, we ask that you complete a short Qualtrics survey about your opinions regarding handoff methods. Over the next two weeks, we ask that you use the attached SBAR for Anesthesia Handoff Tool included along with this email to give bedside report to the PACU RN receiving your patient from the OR. To facilitate ease of use we recommend that you download the tool to your mobile device so that it is readily accessible during report. Additionally, we will have the handoff tool printed for you to use at handoff. The back of the handoff tool will have a short survey for the PACU RN so we ask that you physically handover the tool to the PACU RN when giving bedside report. The PACU RNs will complete the survey and turn it in to the designated area, a locked box in the PACU. Your name will not be associated with this in any way. The PACU RN will provide an assessment of their perceptions regarding the adequacy of this handoff tool, which will allow for data comparison from the perspective of both the user and receiver of the handoff tool. After two weeks of data collection, you will be emailed a second Qualtrics survey in order to obtain your thoughts about the tool. It will ask you to estimate how many times you utilized the tool, as well as what you perceive to be the strengths and weaknesses of the tool.

Slide 6 My project chair is Dr. Maura McAuliffe. If at any point you have questions or concerns about the mechanics of the project, or about how to utilize this tool, please do not hesitate to contact us.

Slide 7 Thank you again for taking the time to help me with this quality improvement project to fulfill the requirements of my DNP.

Slide 8 References

Appendix G

SBAR for Anesthesia Handoff Checklist

<p style="text-align: center;">S Situation</p>	<input type="checkbox"/> Patient Name <input type="checkbox"/> Procedure and Diagnosis <input type="checkbox"/> Allergies
<p style="text-align: center;">B Background</p>	<input type="checkbox"/> PMH <input type="checkbox"/> Significant Labs <input type="checkbox"/> Notable Baseline VS <input type="checkbox"/> • Baseline Neuro Status
<p style="text-align: center;">A Assessment</p>	<input type="checkbox"/> Anesthesia Type (GETA, LMA, MAC, Regional) <input type="checkbox"/> Medications Given <input type="checkbox"/> Opioids <input type="checkbox"/> Benzos <input type="checkbox"/> Antiemetic <input type="checkbox"/> Antibiotics <input type="checkbox"/> Vasopressors <input type="checkbox"/> Other <input type="checkbox"/> Pain Management Plan <input type="checkbox"/> IVs/Catheters <input type="checkbox"/> I & O <input type="checkbox"/> Surgical or Anesthetic Issues & Concerns
<p style="text-align: center;">R Recommendation</p>	<input type="checkbox"/> Additional Questions/Comments <input type="checkbox"/> Abnormal Results <input type="checkbox"/> • Pt Destination

Appendix H

PACU RN Post-intervention Survey

Were the following areas addressed in the handoff?			
	Yes	No	N/A
Was the patient identified			
Allergies			
Antibiotics			
Intake/Output			
EBL			
Pain management			
Nausea management			
Any major concerns that might affect PACU care addressed			

1) Using this tool contributed to an efficient handoff. (circle one)

Strongly Agree Agree Neutral Disagree Strongly Disagree

2) Using this tool contributed to a comprehensive handoff.

Strongly Agree Agree Neutral Disagree Strongly Disagree

3) Using this tool did not increase time needed to receive PACU report.

Strongly Agree Agree Neutral Disagree Strongly Disagree

4) After the transfer was finished, did you find there was essential information missing from the report?

Yes

No

5) Would you like to see **this** particular handoff checklist used in the future?

Yes

No

What is your level of enthusiasm for future use of **this** tool?

Strongly Enthused Enthused Neutral Not Enthused Strongly Not Enthused

Appendix I

Project Timeline

Date	Task
August 2020	Explore project topic
September 2020	Establish search strategy/perform literature search
September 2020	Initial literature matrix
September 2020	Initial draft of Sections 1 and 2
September 2020	IHI cause and effect driver diagram, plan portion of PDSA worksheet
September 2020	Revision of literature matrix
October 2020	Revision of section 1 and 2
October 2020	Completed CITI modules
October 2020	DNP Project Self-Assessment tool
October 2020	Further revision of sections 1 and 2
November 2020	Initial draft of section 3
November 2020	IRB waiver approval
November 2020	Revision of sections 1, 2, and 3
December 2020	Revision of sections 1, 2, and 3
January 2021	Revision of sections 1, 2, and 3
Feb-March 2021	Pre & Post intervention questionnaires finalized
April 2021	Revision of sections 1, 2 and 3
April 2021	Pre-Intervention Qualtrics© survey distributed to participants
April-May 2021	Project Implementation/Data Collection
May 2021	Post-Intervention Qualtrics© survey distributed to participants
May 2021	Revision of sections 1, 2, and 3
June 2021	Data Analysis
July 2021	Initial draft of sections IV and V
August 2021	Revision of sections IV and V, initial draft of section VI
September 2021	Abstract, revision of section VI
October 2021	Revision of all sections
November 2021	Final revision of all sections, submission to chair for final approval