Postoperative Handoff Tool Implementation: Post Anesthesia Care Unit

by

Stephanie Katzer, MS, ACNP-BC

Under Supervision of

Joan Davenport, PhD, RN

Elaine Bundy, DNP, CRNP, NP-C

A DNP Project Manuscript
Submitted in Partial Fulfillment of the Requirements for the
Doctor of Nursing Practice Degree

University of Maryland School of Nursing
May 2019

Abstract

Background: Providing concise postoperative handoff in a Post Anesthesia Care Unit requires that tools and processes are in place. Despite utilizing a handwritten paper containing patient information obtained from the Post Anesthesia Care Unit charge nurse and the operative nurse report prior to the patient transferring to the Post Anesthesia Care Unit from the operating room, many nurses reported feelings of being rushed through report or not having enough time to ask questions and write detailed notes. A formalized postoperative handoff tool was not being utilized in the Post Anesthesia Care Unit necessitating the need for the development and implementation of a unit specific postoperative handoff tool.

Local Problem: Patients receive care from multiple subspecialties and are managed by multiple services during their stay in the Post Anesthesia Care Unit, thus requiring multiple Health Care Provider handoffs. This places the patient at risk for potential errors in care secondary to communication errors. The goal of this quality improvement project was to develop, implement, and evaluate a postoperative handoff tool, thereby increasing Health Care Provider satisfaction with the postoperative handoff tool and procedure in a Post Anesthesia Care Unit, at a large academic medical center in the mid-Atlantic.

Interventions: The purpose of this Doctor of Nursing Practice project was to implement a quality improvement project using an evidence-based postoperative handoff tool to improve Health Care Provider postoperative communication to facilitate the transfer of standardized and comprehensive information. Prior to and fourteen weeks following implementation, Health Care Providers completed surveys to assess the satisfaction of the postoperative handoff tool and process. Compliance and completion rates of tool utilization were then assessed for improvement.

Results: There was improvement in Health Care Provider satisfaction with the handoff tool post-intervention (53.5% pre-intervention versus 80.95% post-intervention, $p = 0.02$). There was no significant difference in Health Care Provider satisfaction with the handoff process (60% pre-intervention versus 76.19% post-intervention, $p = 0.14$) or satisfaction with the usefulness of the handoff tool (46.47% pre-intervention versus 76.19% post-intervention, $p = 0.08$). There was no significant difference in the Health Care Providers need to contact surgical teams to clarify goals of care after handoff (33.34% pre-intervention versus 23.8% post-intervention, $p = 0.05$). There was no significant difference in the Health Care Providers understanding of goals of care after handoff (60% pre-intervention versus 90.48% post-intervention, $p = 0.23$) or understanding of the procedure after handoff (66.67% pre-intervention versus 80.95% post-intervention, $p = 0.71$). There was significant improvement by Health Care Providers in feeling that all question were answered during the handoff process (46.46% pre-intervention versus 80.96% post-intervention, $p = 0.03$). There was improvement in the postoperative handoff tool completion rates (85% at week 8 versus 94% at week 14). There was a 100% compliance rate with postoperative handoff tool utilization throughout implementation.

Conclusions: As a result of implementing a formalized postoperative handoff tool, Health Care Providers reported improved satisfaction with the handoff process and an improved perception of patient care secondary to a relay of information that was standardized and comprehensive. Post-intervention, compliance and completion rates of the postoperative handoff tool improved.

Postoperative Handoff Tool Implementation: Post Anesthesia Care Unit

Background and Significance

The postoperative period is a time when patient physiology is acutely changing, requiring the need for timely and concise Health Care Provider (HCP) handoff. This immediate postoperative period is also a time when failures in communication can result in patient harm due to the patient's combined acuity and transition status (Rose & Newman, 2016). Inadequate handoff communication has been linked to sentinel events such as a delay in treatment, falls, and medication errors (The Joint Commission, 2017). Additionally, poor handoff increases the risk of potential errors in care including miscommunication and following an incorrect treatment plan (Rose & Newman). This can lead to increased patient morbidity and mortality, health care cost, length of stay, sentinel events, as well as a decrease in HCP satisfaction (Rose & Newman).

In 2012, researchers evaluated the impact a standardized handoff process can have on patient care and HCP satisfaction from the operating room to a cardiac intensive care unit: the investigators reported that a standardized handoff process improved HCP satisfaction from 61% to 81% and reduced the risk of missed critical information from 26% to 16% (Petrovic et al., 2012). Further research demonstrated that the utilization of a standardized handoff tool identified an improved reliability in handoffs from 59% to over 90% (Boat, Spaeth, & Kurth, 2013). In 2012, in an effort to aid organizations in the prevention of communication errors in the transfer of critical information, the Joint Commission Center for Transforming Healthcare released a target solution tool centered on handoff communication (2012).

The Post Anesthesia Care Unit (PACU) at a large academic medical center in the mid-Atlantic, recovers an average of fifty patients daily from many different surgical services, requiring the need for handoffs between multiple HCPs. Poor postoperative patient handoff communication was identified as a potential patient safety issue by HCPs in the PACU of this medical center. HCP handoff is the exchange of patient information in the immediate postoperative period between the operative team to include a surgeon and certified registered anesthetist or anesthesiologist, and the PACU team to include the nurse practitioner or physician and bedside nurse.

A formalized postoperative handoff tool was not utilized in the PACU prior to the development and implementation of the handoff tool created by a multidisciplinary team. Throughout the PACU, bedside nurses were utilizing a handwritten paper that contained patient information obtained from the PACU charge nurse and the operative nurse report prior to the patient transferring to the PACU from the operating room. Many PACU nurses reported not utilizing this paper because they had created their own system for receiving report and often reported feelings of being rushed through report or not having enough time to write detailed notes (PACU Nurses, Personal Communication, October 15, 2018). This paper contained very little information as the majority of the report was performed at the bedside when the patient presented to the PACU. Implementing a formalized HCP handoff tool and procedure may ensure that information relayed is standardized and comprehensive so the care team can quickly move forward in providing individualized, high quality, and safe patient care.

Purpose Statement

The purpose of this Doctor of Nursing Practice quality improvement project was to implement and evaluate a postoperative handoff tool in a PACU. The short-term goals of the DNP project were an anticipated 50% compliance rate with the utilization of the postoperative handoff tool and a 50% rate of completeness in utilizing the postoperative handoff tool by November 1, 2018. The long-term goals of the DNP project were a 100% compliance rate with the utilization of the postoperative handoff tool, a 90% rate of completeness in utilizing the handoff tool, and a 30% increase in HCP satisfaction with the postoperative handoff tool and procedure when comparing the pre and post survey data by December 15, 2018.

Theoretical Framework

Meleis' Transition Theory

Meleis' Transition Theory focuses on the transitions through not only life events but the healthcare continuum (Meleis, Sawyer, Hilfinger Messias, & Schumacher, 2000). The purpose of this theory is to assist the HCP in ensuring the patient has a successful transition through transition facilitation and an understanding of the process. Transition Theory generates a guide (see Figure 1) for effective care before, during, and after the transition period. This guide allows for the evaluation of the human transition through description, explanation, and prediction (Meleis et al., 2000). The assumptions inherent in the theory is that in predicting responses centered around transition experiences that can either positively or negatively impact the health of a patient, the HCP can facilitate the transition experience to allow for preventative and restorative action to influence the outcome (Meleis et al.).

The implementation of Transition Theory allows for the successful situational transition of the patient by predicting possible pitfalls and generating a guide for effective care before, during, and after the transition period. As a patient is transitioning from the operating room to the PACU, it is imperative that accurate and judicious postoperative handoff is given to maintain maximum patient safety. Transitions Theory helped to support the evaluation process of this DNP quality improvement project through this greater understanding of the handoff process through the lived experience, of the HCP team, thereby allowing for evaluation of the handoff tool and process leading to further development of interventions.

Plan Do Study Act

As part of the Institute for Healthcare Improvement Model for Improvement, the Model for Quality Improvement with Plan Do Study Act (PDSA) was developed on the foundation of the scientific method in helping an organization work through quality improvement problems (Institute for Healthcare Improvement, 2017). The Model for Quality Improvement with PDSA is clear and concise. Its simplicity of use makes for easy understanding by the HCP. The model is easily accessible, generalizable to quality improvement, and provides an exceptional foundation for added change. Within the health care system, the importance of the Model for Quality Improvement with PDSA is that it allows for the coordination of clinical, operational, educational, and research disciplines to bring research and practice together (Speroff & O'Connor, 2004). The PDSA model supported this quality improvement project through the utilization of small test of change. As seen in Figure 2, the structure of the model allowed for a continuous relationship of the concepts through a cyclical approach for problem solving.

Literature Review

The focus of this literature review (see Appendix B for Evidence Review Table) was to identify the evidence to support the need for accurate and concise HCP handoff during the postoperative period. The literature review began broadly with a review of the evidence focusing on strategies for effective postoperative handoff. The discussion is followed by a review of current evidence surrounding barriers and facilitators that influence effective postoperative handoff. The review will conclude with current evidence on handoff protocols and tools.

Strategies for Effective Postoperative Handoff

Three articles were reviewed for strategies for effective postoperative handoff. The evidence selected consisted of two systematic reviews and one scoping review of the literature.

A systematic review by Riesenberg, Leitzsch, and Cunningham (2010), reviewed 95 articles focusing on nursing handoff in the United States. Of those, 20 studies described non-randomized controlled trail research studies, 15 of the research studies were cross-sectional and one was qualitative. Riesenberg, Leitzsch, and Cunningham identified that effective handoff strategies might apply differently depending on the health care setting, though found a limitation in the variety of health care environments where handoffs took place with Situation, Background, Assessment, Recommendation listed as the most frequently cited mnemonic.

A scoping review by Rose and Newman (2016), reviewed 23 articles, to gain a better perspective of the literature surrounding postoperative handoff. They identified that the standardization of information transfers has demonstrated an improvement in the amount and quality of the information transferred as well as HCP satisfaction with the information transfer process. Limitations consisted of no review of randomized control trials, though utilized the Social Ecological Model to provide a framework to systematically identify interrelated factors influencing information transfer (Rose & Newman).

A systematic review by Segall et al., (2012), reviewed 31 articles focusing on handover care from the OR to the PACU or intensive care unit, though found limitations in adapting recommendations to clinical practice. The research did support a standardized process and the use of patient specific discussions during handoff (Segall et al.). Of the 31 articles reviewed, 18 were cross-sectional studies, 4 of the articles described intervention-based studies, and 5 of the articles described training handoff initiatives. Limitations included small sample sizes and focusing on 1 study population leading toward limited generalizability.

Several emerging themes centered on strategies for effective postoperative handoff were identified within the literature: formulating good communication skills, the utilization of standardized strategies for handoff, limiting interruptions, training on handoff tool/process, and garnering support from key stakeholders (Riesenberg et al., 2010; Rose & Newman, 2016; Segall et al., 2012). Additional strategies include positive organizational dynamics, which included an emphasis on a culture of patient safety (Rose & Newman, 2016). Segall et al. (2012) focused on strategies such as the completion of task prior to handoff, discussion of only patient specific details during handoff, and requiring that all multidisciplinary team members be present for handoff.

Barriers and Facilitators

In the identification of barriers and facilitators that influence postoperative handoff, two articles were reviewed. Welsh, Flanagan, and Ebright (2010) conducted a qualitative, descriptive pilot study at a large midwestern veteran's medical center to identify specific factors limiting and facilitating handoffs. The study consisted of 20 nurses across three inpatient units and examined both taped and written approaches to nursing shift reports. Convenience sampling and non-generalizability of findings were listed as limitations (Welsh et al., 2010). Individual and paired interviews can be listed as limitation due to building upon each other's comments, though listed as a strength as well because it added depth and clarity to responses (Welsh et al., 2010).

Barriers identified across the two studies include too little information, too much information, inconsistent quality, limited opportunity for clarification, and frequent interruptions during handoff (Welsh et al., 2010; Riesenberg et al., 2010). Common facilitators identified across the two studies include pertinent content, allocated space for notes on the handoff tool, in person handoff, and a structured handoff tool (Welsh et al., 2010; Riesenberg et al., 2010). Additionally, Welsh et al. (2010) concluded that facilitators of well communicated handoff reports consisted of an exchange of information that is standardized, relevant, and organized.

Protocols and Tools

In the evaluation of handoff protocols and tools, there is little research published on specific structured handoff tools, the emerging themes center on the need for unit specific handoff tools and processes. There is not one single best practice handoff tool within the research, though researchers agree that there are best practices surrounding handoffs that should be considered prior to any change initiative (Boat, Spaeth, & Kurth, 2013; Horwitz et al., 2013; Petrovic et al., 2012; Staggers & Blaz, 2013; Tapia, Fallon, Brandt, Scott, & Suliburk, 2013). Boat, Spaeth, and Kurth (2013) identified a 59% to 90% increase in reliability in the postoperative handoff with the utilization of a standardized handoff tool. Additionally, in a subsequent study, investigators concluded that a postoperative handoff protocol reduced handoff errors (9.92 to 3.68), improved the sharing of information, and significantly improved nursing satisfaction with the handoff (Petrovic et al., 2015). Furthermore, an integrative review by Staggers and Blaz (2013) identified within the literature that verbal handoff with a supplemental written tool to be most commonly used within practice.

The literature reviewed describes strategies for effective postoperative handoff, evidence surrounding barriers and facilitators, and the current evidence on handoff protocols and tools. The need for accurate and concise nursing and healthcare provider handoff is supported in the review of literature.

Plan for Implementation

The purpose of this DNP quality improvement project was to implement and evaluate a postoperative handoff tool in a PACU, in a large academic medical center. The anticipated outcome of this quality improvement project was a 30% increase HCP satisfaction with the postoperative handoff tool and procedure, a 100% compliance rate with the utilization of the postoperative handoff tool, and a 90% rate of completeness in utilizing the postoperative handoff tool. Inclusion criteria for the patient population included all patients presenting to the PACU for postoperative care between the hours of 1900 and 0700 over a 14-week period. Inclusion criteria for the HCP sample was all HCPs involved in the exchange of information between the operative team to include a surgeon and certified registered anesthetist or anesthesiologist, and the PACU team to include the nurse practitioner or physician and bedside nurse.

The DNP project took place from September 1, 2018 to December 15, 2018. During the first and second weeks of implementation, the project leader: (1) identified and met with core team members; (2) presented data necessitating the need for a formalized postoperative handoff tool and process; (3) formalized the postoperative handoff tool and process with input and approval from PACU leaders, anesthesia leaders, and surgical leaders; (4) coordinated education with the introduction of the DNP project, purpose, and a copy of the formalized postoperative handoff tool via email, daily staff huddles, and weekly staff meetings; (5) identified unit champions, which included charge nurses and senior clinical nurses; (6) trained unit champions to aid with training staff on the postoperative handoff tool, process, and expectations (see Appendix C for the Postoperative Handoff Tool Lesson Plan); (7) coordinated training staff on the postoperative handoff tool, process, and expectations; and (8) administered the postoperative handoff tool and process satisfaction pre-survey via a Survey Monkey questionnaire (see Appendix D for Postoperative Handoff Satisfaction Survey).

During the third and fourth weeks of implementation, the project leader: (1) began utilization of the postoperative handoff tool and process; (2) continued staff education on the postoperative handoff tool, process, and expectations until 100% of staff education was complete (see Appendix E for the Completed PACU Postoperative Handoff Education tool); (3) began audits of the postoperative handoff tool utilization three times a week through direct observation and review of completed handoff tools (see Appendix F for the Postoperative Handoff Tool Audit Form); (4) encouraged feedback and gave feedback on the postoperative handoff tool via daily shift huddles, email, direct conversation, and audits.

During weeks five through fourteen of implementation, the project leader: (1) continued staff education on the postoperative handoff tool, process, and expectations until 100% of staff education was complete; (2) continued audits of the postoperative handoff tool utilization three times a week through direct observation and review of completed handoff tools; (3) encouraged feedback and gave feedback on the postoperative handoff tool and process via daily shift huddles, email, direct conversation, and audits; (4) incorporated changes to postoperative handoff tool and process as appropriate. At the completion of implementation, week 14, the postoperative handoff tool and process satisfaction post-survey via a Survey Monkey questionnaire was administered.

Data Collection Plan

Data collection occurred through the use of three different data collection tools. A 13 question Likert Like pre/post survey was administered via Survey Monkey software to evaluate staff perceptions. The survey was administered before implementation at week one and then again post implementation at week 14. A postoperative handoff tool audit form was utilized to help identify the percentage of compliance and completion rate of the postoperative handoff tool. This tool was utilized weekly beginning in week three through week 14. Finally, a check off tool was utilized to identify which nurses within the PACU have received training on the usage of the postoperative handoff tool and process. This tool was utilized weekly until all PACU nurses received education on the postoperative handoff tool and process.

Data Analysis Plan

The outcome measures of interest include HCP satisfaction, compliance rate of tool utilization, and completion rate of tool utilization. HCP satisfaction was measured by a 13 question 5-point Likert Like (very dissatisfied, dissatisfied, neutral, satisfied, and very satisfied) (never, seldom, about half the time, usually, and always) pre/post implementation survey. Survey questions were adapted, with permission (see Appendix G for the approval letter for utilization of the Postoperative Handoff Satisfaction Survey), from a postoperative survey developed by a multidisciplinary group within the same medical center evaluating nursing perception of postoperative handoff. Compliance rate of tool utilization was measured by comparing the number of patients admitted to the PACU from 1900 to 0700 versus the number of completed handoff tools. Completion rate of tool utilization was calculated at weeks 8 and 14 using information from the top of the handoff tool, which included information from the OR nurse to PACU nurse report prior to the patient arriving to the PACU. The handoff tools were also evaluated for questions and feedback from the PACU nurses to utilize in the revision of the handoff tool.

Data analysis was conducted utilizing Microsoft Excel for Windows and Survey Monkey Software. Descriptive statistics were utilized to analyze the data. All of the survey questions were evaluated as dichotomous variables comparing the pre/post implementation data with chi-square for unpaired data.

Protection of Human Subjects

A DNP quality improvement project inquiry was submitted to the University of Maryland Baltimore Institutional Review Board (IRB) for a Non-Human Subjects Research determination. The survey was anonymously administered to health care providers by Survey Monkey software.

The information collected in the survey tool was stored on the Survey Monkey software and through the use of Microsoft Excel spreadsheet on a password protected computer. Anonymity was maintained by utilizing the anonymous response collector option within the Survey Monkey software, which does not track or store identifiable respondent information in survey results. Patient identifiers were not collected. A list of PACU nurses was provided from the PACU manager in order to document those nurses who were given education on the postoperative handoff tool and process.

Plan for Sustainability

The plan for sustainability for this DNP quality improvement project included the continued engagement of senior clinical leaders within PACU administration, continued inclusion of PACU champions of change, integration of the postoperative handoff tool into shift care routine, and continued education and feedback from HCPs on the postoperative handoff tool and process. Continued feedback and revisions from HCPs on the postoperative handoff tool and process allowed for greater stakeholder buy-in and sustainability. With this greater stakeholder buy-in from senior leaders within the organization, the ability for further spread to other units within the organization becomes possible.

Utilizing the PDSA model allowed further sustainability and evaluation of this DNP quality improvement project through the application of small tests of change throughout the implementation and evaluation process. The PDSA model is cyclical in nature and is meant to be used multiple times throughout the quality improvement process. Step one: Plan: Plan the test, including a plan for collecting data. Data collection tools were developed. Step two: Do: Run the test on a small scale. Implementation took place over a nine-week period where the postoperative handoff tool was implemented into daily use. Step three: Study: Analyze the results and compare them to your predictions. After the implementation period, a review of the postoperative handoff tool to evaluate compliance rate and tool completion rate was conducted. Step four: Act: Based on what you learned from the test, plan for your next step (Speroff & O'Connor, 2004). With the knowledge gained from the Study phase of PDSA, changes needed to the postoperative handoff tool and process were made. The long-term goal of this DNP quality improvement project was for this handoff tool to spread system-wide, so that other units and hospitals within the organization can benefit from the tool as well to improve sustainability. The Transitions Theory helped to support the evaluation process through a greater understanding of the handoff process through the lived experience of the HCP team, thereby allowing for evaluation of the handoff tool and process leading to further development of interventions.

Results

A Postoperative Handoff Satisfaction Survey was utilized to determine if HCP satisfaction with the postoperative handoff tool and procedure improved, compliance rates with the utilization of the postoperative handoff tool improved, and completion rates in utilizing the postoperative handoff tool improved from the pre-intervention timeframe to the post-intervention timeframe. During the pre-intervention period, 13 participants completed the survey. During the post-intervention period, 21 participants completed the survey. Data analysis was conducted utilizing Microsoft Excel for Windows. Descriptive statistics were utilized to analyze the data. All of the survey questions were evaluated as dichotomous variables comparing the pre/post implementation data with chi-square for unpaired data (see Table 1).

There was significant improvement in HCP satisfaction with the handoff tool post-intervention (53.5% pre-intervention versus 80.95% post-intervention, $p = 0.02$). There was no significant difference in HCP satisfaction with the handoff process (60% pre-intervention versus

76.19% post-intervention, $p = 0.14$) or HCP satisfaction with the usefulness of the handoff tool (46.47% pre-intervention versus 76.19% post-intervention, $p = 0.08$). There was no significant difference in the HCPs need to contact surgical teams to clarify goals of care after handoff (33.34% pre-intervention versus 23.8% post-intervention, $p = 0.05$). There was no significant difference in the HCPs understanding of goals of care after handoff (60% pre-intervention versus 90.48% post-intervention, $p = 0.23$) or understanding of the procedure after handoff (66.67% pre-intervention versus 80.95% post-intervention, $p = 0.71$) (see Table 1).

There was no significant difference in feeling included in handoff (86.76% pre-intervention as compared to 95.24% post-intervention, $p = 0.76$) or in feeling comfortable asking questions during handoff (93.33% pre-intervention versus 95.24% post-intervention, $p = 0.81$). There was significant improvement by HCPs in feeling that all question were answered during the handoff process (46.46% pre-intervention versus 80.96% post-intervention, $p = 0.03$). There was no significant difference in feeling too busy with routine activities to participate in handoff (33.34% pre-intervention versus 9.52% post-intervention, $p = 0.06$) or feeling too busy with urgent activities to participate in handoff (13.34% pre-intervention versus 9.53% post-intervention, $p = 0.34$). There was no significant difference in the utilization of the handoff tool in nurse to nurse sign-out (60% pre-intervention versus 80.95% post-intervention, $p = 0.12$) or in perception that a formalized handoff tool as important (80% pre-intervention versus 95.24% post-intervention, $p = 0.32$) (see Table 1).

At weeks four and eight during the implementation phase, the handoff tool was reviewed for usefulness after receiving direct feedback from the healthcare providers during staff huddles, walking rounds, and written remarks on the handoff tool. After review, the postoperative handoff tool was revised and re-implemented utilizing a multidisciplinary team, which included, PACU leadership, bedside nursing staff, and the project leader. During the second review of the Handoff Tool, additional changes were implemented after receiving direct feedback from HCPs (see Appendix H for Revision 2).

The completion rate of tool utilization was measured by evaluating the completeness of the postoperative handoff tools on patients admitted to the PACU between the hours of 1900 and 0700. In total, 73 handoff tools were evaluated over the 14-week implementation period. Given that all the items on the handoff tool did not pertain to each patient, completion rates were calculated from the top of the handoff tool, which included information from the OR nurse to PACU nurse report. At week 8 of implementation, 38 postoperative handoff tools had been collected with an 85% completion rate. At week 14 of implementation, 35 postoperative handoff tools had been collected with a completion rate of 94%. The handoff tools were also evaluated for questions and feedback from the PACU nurses to utilize in the revision of the handoff tool.

Compliance rate of tool utilization was measured by comparing the number of patients admitted to the PACU between the hours of 1900 and 0700 versus the number of completed handoff tools. As the PACU charge nurse utilized the postoperative handoff tool to take report from the operating room nurse on all patients admitted to the PACU, the rate of tool utilization was 100%.

An unintended barrier identified during the implementation phase consisted of the change in Anesthesia and Surgery Residents rotating in the PACU for the pre-survey phase versus the post-survey phase. Due to this unintended consequence, pre and post-survey data was only collected from PACU nurses.

Discussion

The implementation of the handoff tool allowed the nurse to note pertinent information by filling in the predetermined blanks (see Appendix I). Through staff huddles and nursing rounds, it was discovered that the handoff tool also helped to trigger the bedside nurse, anesthesia provider, and surgical provider to provide additional information that may have inadvertently been excluded.

The first multidisciplinary audit of the handoff tool showed little to no utilization of the following sections: Post Anesthesia Plan, Checks, Location of Anastomosis, and Enteral Access. The note section was made larger to allow more space for documentation with further modifications to help staff identify and facilitate the areas that needed completion. Incisions/Dressings/Drains was moved to the front and changed to Dressing, Drains, & Lines. PACU In Time was added. The body figures on the back were decreased in size. Additionally, to help with the flow of handoff, the top of the form was fitted primarily for charge nurse report with the bottom of the form fitted primarily for bedside nurse report. These changes were made to help incorporate ease of flow during postoperative handoff report (see Appendix I for Revision 1).

The results were similar with findings from the research. Comparable to Welsh et al. (2010) and Riesenberg et al. (2010), successful design of the handoff tool included pertinent content, allocated space for notes on the handoff tool, and a structured handoff tool. As there is not one single best practice handoff tool within the research, the common theme throughout the research is the need for unit specific handoff tools and processes. In the process of developing the handoff tool, recommendations for the various tool components were derived from the evidence in the literature to fit the specific needs of the unit (Boat, Spaeth, & Kurth, 2013;

Horwitz et al., 2013; Petrovic et al., 2012; Sand-Jecklin & Sherman, 2013; Staggers & Blaz, 2013; Tapia, Fallon, Brandt, Scott, & Suliburk, 2013). Without the development and implementation of a unit specific handoff tool, there would have been a tool that contained non-specific information that would not have pertained to the PACU patient population.

The observed outcomes were consistent with the anticipated outcomes. As with any new process implementation, it is challenging to learn and utilize a new tool. Encouragement from PACU leadership and small group sessions on how to utilize the tool helped to ease the transition. Most importantly, giving frequent updates about tool utilization and incorporating staff feedback into handoff tool revision helped to create more buy-in. As implementation progressed, PACU leadership and HCPs embraced the process of revising the handoff tool to fit the unit specific needs of the PACU postoperative patient and workflow.

The strengths of this project centered around the culture of the PACU, unit buy-in, and leadership engagement. The PACU was ready for a change in the handoff tool design and leadership was engaged in the process through frequent updates about tool utilization and incorporation of feedback into tool revision. The use of small group sessions, allowing for open feedback, and incorporating feedback from healthcare providers for each revision allowed for successful design and implementation of the postoperative handoff tool.

Limitations to the generalizability of the work include the unit specific handoff tool. While the tool may fit the specific needs of the PACU, it would not be as useful for another unit within the same organization. A potential bias and facilitator was identified, as the project leader currently works in the PACU as a nurse practitioner. As the project leader is well known to the PACU staff, buy-in might have been affected. To limit or minimize this potential bias, staff were encouraged to give feedback through multiple forums, which included, unit champion meetings, daily staff huddles, and written feedback on the postoperative handoff tools. An additional limitation consisted of the different anesthesia and surgical resident providers from the beginning of the project to the end. The difference in providers concluded in the lack of survey completion from the anesthesia and surgical resident providers for the pre and post survey.

In the evaluation of tool completion rates, it was important to note that not every part of the tool pertained to every patient. To adjust for this limitation, completion rates were calculated from the top of the handoff tool, which included information from the OR nurse to PACU nurse report. As there was no other tool in place and this was the only tool in use in the PACU during implementation, compliance rates were at 100% throughout implementation. It is important to note that this might not have been the case if another postoperative handoff tool was already in place prior to implementation.

Conclusion

As a result of implementing a formalized postoperative handoff tool, the PACU HCPs reported improved satisfaction with the handoff tool and an improved perception of patient care secondary to a relay of information that was standardized and comprehensive. The sustainability of the postoperative handoff tool is increased with continued engagement of PACU leadership and continued feedback from HCPs on the postoperative handoff tool and process to allow for greater stakeholder buy-in. With this greater stakeholder buy-in from senior leaders within the organization, the ability for potential spread to other units within the organization becomes possible.

The implications for practice and future quality improvement projects centers around the potential spread to other units within the organization and their ability to revise the postoperative handoff tool to their unit specific needs to help ensure that information is standardized and comprehensive. The suggested next steps for this quality improvement project is to continue to revise the postoperative handoff tool utilizing the PDSA cycle for small test of change to fit the changing unit specific needs of the PACU. Additionally, with the increasing use of work stations on wheels, the potential for this tool to be a part of the electronic medical record is amplified.

References

Boat, A. C., Spaeth, J. P., & Kurth, D. (2013). Handoff checklists improve the reliability of patient handoffs in the operating room and post anesthesia care unit. *Pediatric Anesthesia,* 23(7), 647-654.doi:10.1111/pan.12199

Horwitz, L. I., Dombroski, J., Murphy, T. E., Farnan, J. M., Johnson, J. K., & Arora, V. M. (2013). Validation of a handoff assessment tool: The Handoff CEX. *Journal Of Clinical Nursing*, 22(9/10), 1477-1486.doi:10.1111/j.1365-2702.2012.04131.x

Im, E. (2014). Situation-specific theories from the middle-range transitions theory. *Advances In Nursing Science,* 37(1), 19-31. doi:10.1097/ANS.0000000000000014

Institute for Health Care Improvement. (2017). QI essentials toolkit: PDSA worksheet. Retrieved from http://www.ihi.org/QIToolkit_PDSAWorksheet.pdf

Joint Commission Center for Transforming Healthcare. Targeted solutions tool for hand-off communications. (2012). *Joint Commission Perspectives. Joint Commission On Accreditation Of Healthcare Organizations,* 32(8), 1.

Meleis, A. I., Sawyer, L. M., Hilfinger Messias, D. K., & Schumacher, K. (2000). Experiencing transitions: An emerging middle-range theory. *Advances in Nursing Science*, 23, 12-28.

Melnyk, B.M. & Fineout-Overholt, E. (2014). *Evidence-based practice in nursing & healthcare: A guide to best practice* (3rd ed.). New York: Lippincott, Williams & Wilkins.

Newhouse, R.P. (2006). Examining the support for evidence-based nursing practice. *Journal of Nursing Administration,* 36(7-8), 337-40.

Petrovic, M. A., Aboumatar, H., Baumgartner, W. A., Ulatowski, J. A., Moyer, J., Chang, T. Y., & ... Martinez, E. A. (2012). Pilot implementation of a perioperative protocol to guide operating room-to-intensive care unit patient handoffs. *Journal Of Cardiothoracic And*

Vascular Anesthesia, 26(1), 11-16.doi:10.1053/j.jvca.2011.07.009

Petrovic, M. A., Aboumatar, H., Scholl, A. T., Gill, R. S., Krenzischek, D. A., Camp, M. S., & ... Martinez, E. A. (2015). The perioperative handoff protocol: evaluating impacts on handoff defects and provider satisfaction in adult perianesthesia care units. *Journal Of Clinical Anesthesia*, 27(2), 111-119. doi:10.1016/j.jclinane.2014.09.007

Riesenberg, L. A., Leitzsch, J., & Cunningham, J. M. (2010). Nursing handoffs: a systematic review of the literature. *The American Journal Of Nursing*, 110(4), 24-34. doi:10.1097/01.NAJ.0000370154.79857.09

Rose, M. & Newman, S. D. (2016). Factors influencing patient safety during postoperative handover. *AANA Journal*, 84(5), 329-338.

Sand-Jecklin, K. & Sherman, J. (2013). Incorporating bedside report into nursing handoff: evaluation of change in practice. *Journal Of Nursing Care Quality*, 28(2), 186-194. doi:10.1097/NCQ.0b013e31827a4795

Segall, N., Bonifacio, A. S., Schroeder, R. A., Barbeito, A., Rogers, D., Thornlow, D. K., & ... Mark, J. B. (2012). Can we make postoperative patient handovers safer? A systematic review of the literature. *Anesthesia And Analgesia*, 115(1), 102-115. doi:10.1213/ANE.0b013e318253af4b

Smith, M. C., & Parker, M. E. (2015). *Nursing theories & nursing practice (4th ed.)* (pp. 361-380). Philadelphia, PA: F. A. Davis Company.

Speroff, T. & O’Connor, G. (2004). Study designs for PDSA quality improvement research. *Journal of Quality Management in Health Care*, 13(1): 17-32. Retrieved from http://ovidsp.tx.ovid.com.proxy-hs.researchport.umd.edu/sp-3.24

Staggers, N., & Blaz, J. W. (2013). Research on nursing handoffs for medical and surgical settings: An integrative review. *Journal Of Advanced Nursing*, 69(2), 247-262. doi:10.1111/j.1365-2648.2012.06087.x

Tapia, N. M., Fallon, S. C., Brandt, M. L., Scott, B. G., & Suliburk, J. W. (2013). Association for Academic Surgery: Assessment and standardization of resident handoff practices: PACT project. *Journal Of Surgical Research*, 18471-77. doi:10.1016/j.jss.2013.04.063

The Joint Commission. (2017). Sentinel event alert. *The Joint Commission*. https://www.jointcommission.org/assets/1/18/SEA_58_Hand_off_Comms_9_6_17_FINAL (1).pdf

Welsh, C., Flanagan, M., & Ebright, P. (2010). Barriers and facilitators to nursing handoffs: recommendations for redesign. *Nursing Outlook*, 58(3), 148-154. doi:10.1016/j.outlook.2009.10.005

Table 1

Pre and post-intervention comparison of health care provider perceptions from postoperative handoff satisfaction survey

Health Care Providers Report:	% Pre-Intervention (n = 15)	% Post-Intervention (n = 21)	*p*-value
Satisfied with handoff process	60%	76.19%	0.14
Satisfied with handoff form	53.3%	80.95%	0.02
Satisfied with usefulness of handoff form	46.67%	76.19%	0.08
Firm understanding of goals of care after handoff	60%	90.48%	0.23
Need to contact surgical teams to clarify goal of care after handoff	33.34%	23.8%	0.05
Firm understanding of procedure after handoff	66.67%	80.95%	0.71
Feel included in handoff	86.67%	95.24%	0.76
Feel comfortable asking questions	93.33%	95.24%	0.81
Feel all questions answered during handoff	46.67%	80.96%	0.03
Feeling too busy with *routine* activities to participate in handoff	33.34%	9.52%	0.06
Feeling too busy with *urgent* activities to participate in handoff	13.34%	9.53%	0.34
Utilize handoff tool in nurse to nurse sign-out	60%	80.95%	0.12
Perceive formalized handoff tool as important	80%	95.24%	0.32

Note. Data source: satisfactionsurvey_2017

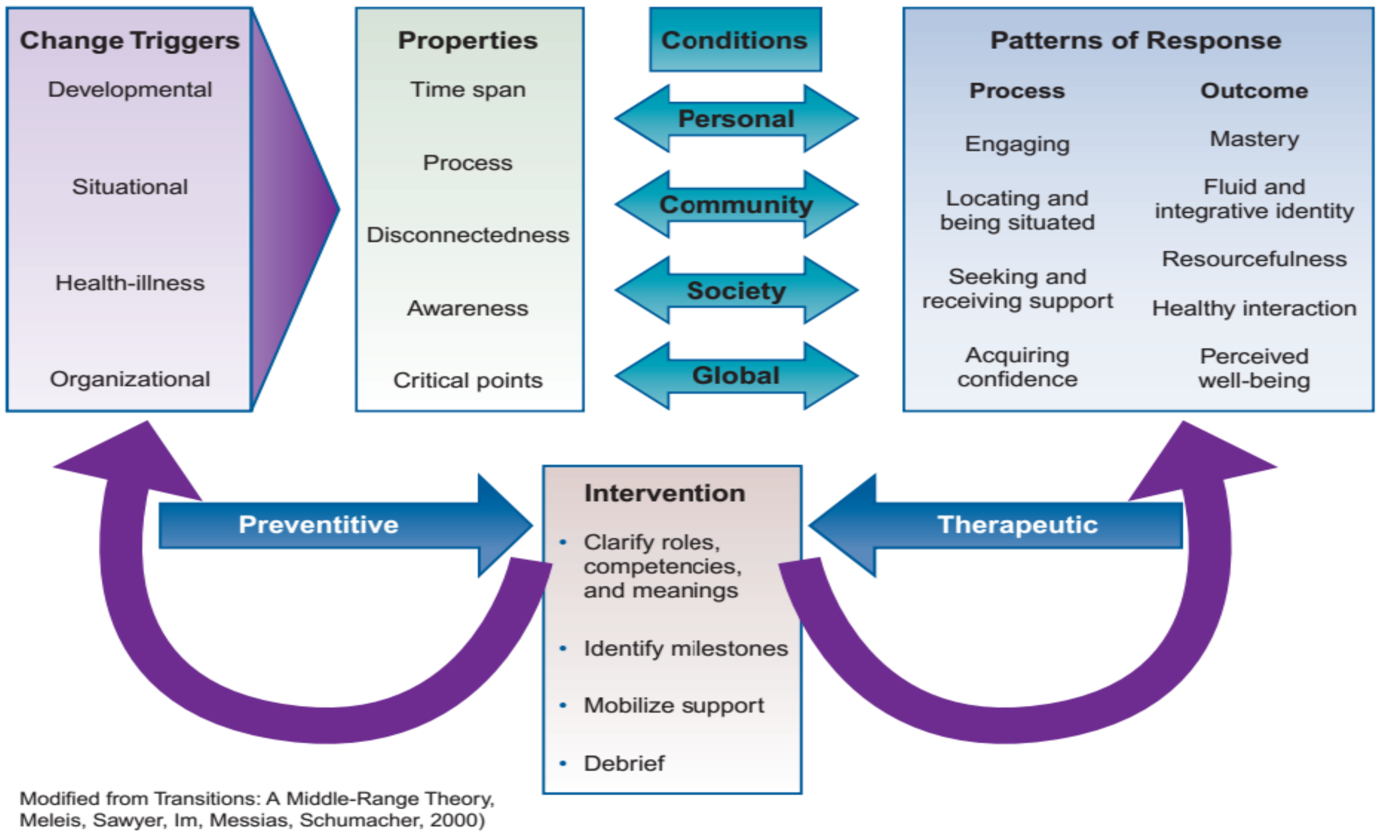


Figure 1. Transitions: A middle-range theory. Adapted from Smith & Parker (2015, p 364).

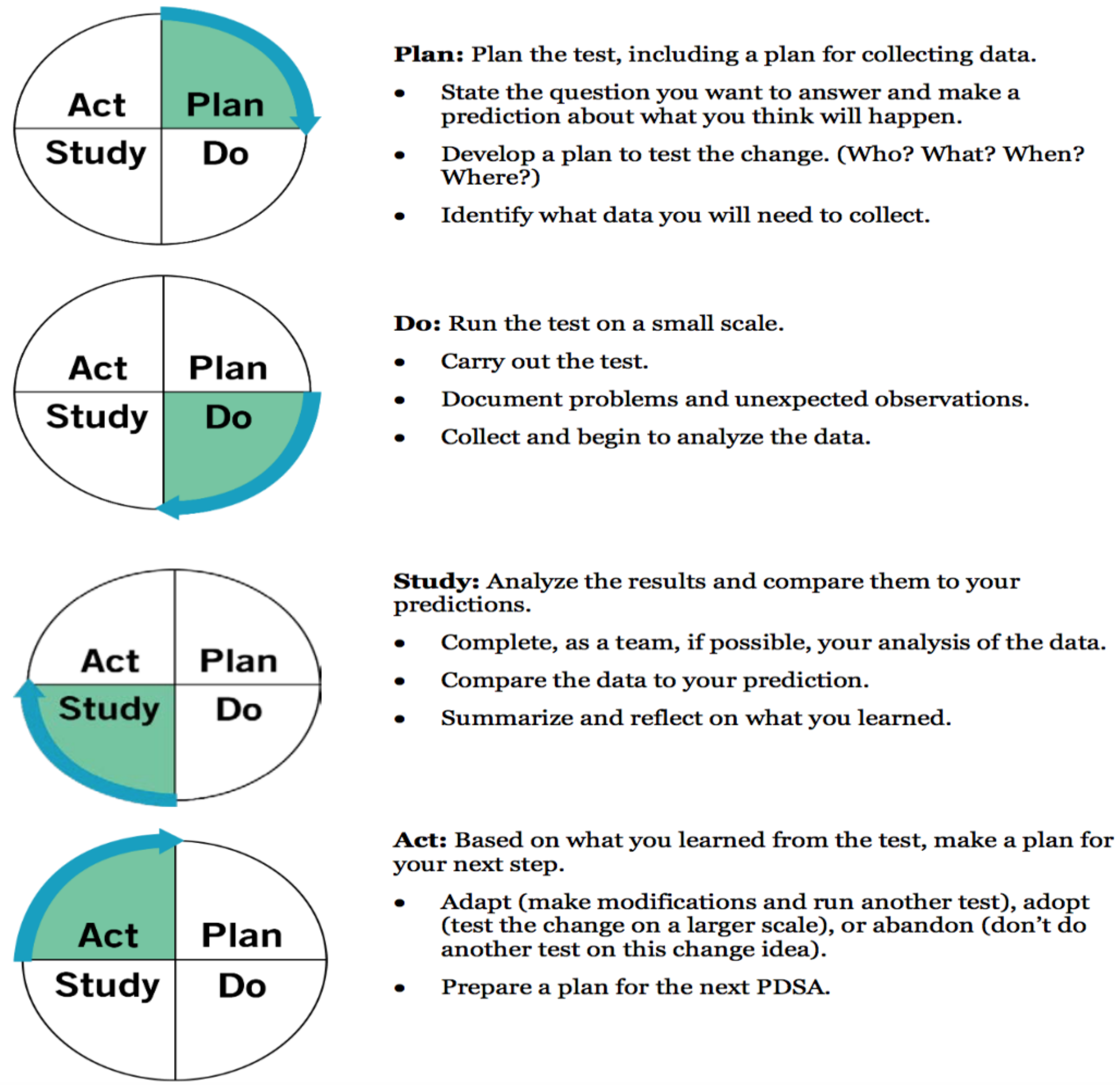


Figure 2. PDSA Healthcare Model for Healthcare Improvement. Adapted from Institute for Healthcare Improvement. (2017, p 2).

Appendix A

PACU Postoperative Handoff Tool

PACU Postoperative Handoff Tool

Service/Contact #: ______________________

Postop Destination: ______________________

Diagnosis: ______________________

Procedure: ______________________

____

Patient Sticker

- ☐ ID Band Verified
- ☐ Blood Band Verified

HPI:

I&Os:

IVF:	
Albumin:	
PRBC:	
FFP:	
Platelets:	
Cell saver:	
Cryo:	
EBL:	
UOP:	
Ascites:	

Intra-op Medications:

Abx	
Anesthetics	
Reversed?	
Pain	

Allergies/Isolation:

Diagnostics Needed:

XR	
CT	
MRI	
Postop Labs?	

HD Goals:

SBP	
MAP	
HR	

Checks:

NV	
Flap	
Neuro	
Light Percept	
Vision	

Notes:

Enteral Access:

NGT	
G-Tube	
Meds Okay?	
Feed Okay?	

Postoperative Care:

IVF	
UOP Goal	
Abx	

Pre-Op Neuro Function:

Post Anesthesia Plan:

N&V	
Pain Plan?	

Extubation Plan:

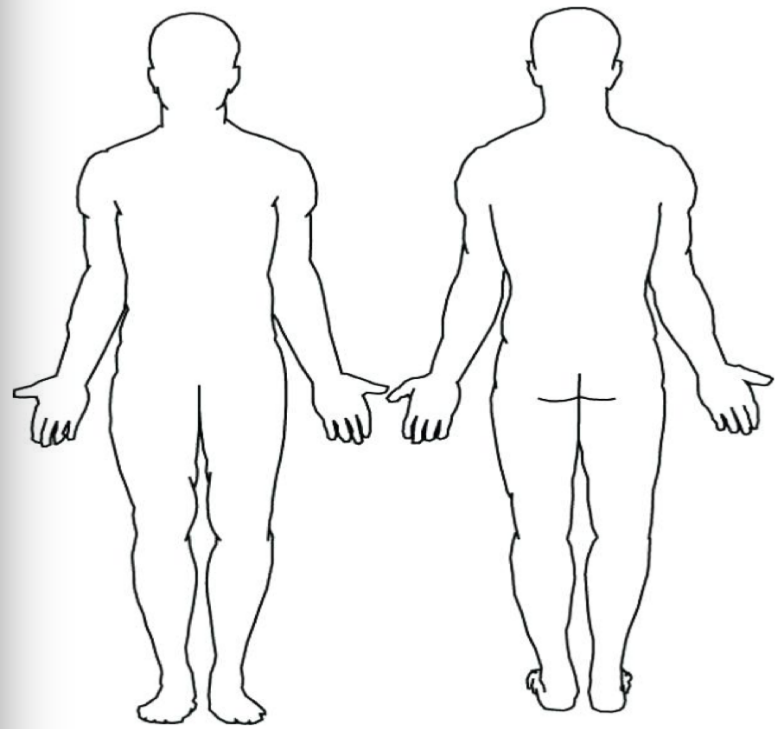
Difficult Intubation	
RASS Goal	
Wake & Wean	
AM Rounds	
Keep Intubated?	

Surgery Specific Postop Plan:

☐ Family Updated

Reminders:

- ☐ **Assign RN**
- ☐ **Handoff from OR**
- ☐ **Education**
- ☐ **Care Plan**
- ☐ **Handoff**
- ☐ **Events**
- ☐ **Verify**
- ☐
- ☐



Incisions/Dressings/Drains:

Type	Location	Suction	Empty qhr

Location of Anastomosis:

Access:

For PACU use only. This document is not part of the medical record, do not place in patient chart.

Appendix B

Postoperative Handoff Tool Implementation in the PACU: Evidence Review Table

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	*Level and Quality Rating
Boat, Spaeth, & Kurth, 2013	To develop and implement standardized checklists for handoffs of care in the operating room and PACU.	Controlled trial without randomization.	Convenience sample. Patients within the operating room and PACU. N=512	Number of times the handoff checklist was completed intraoperatively and in the PACU.	• Twenty to 100% improvement in reliability of intraoperative anesthesia handoffs with use of the intraoperative handoff checklist. • Reliability of PACU handoffs improved from 59% to 90% with the introduction of a standardized PACU checklist.	3 B
Horwitz, Dombroski, Murphy, Farnan, Johnson, et. al, 2013	Aim to test the feasibility and validity of a handoff evaluation tool for nurses.	Prospective cohort	98 evaluations were obtained from 25 reports.	2 handoff tools were designed, one to assess the person providing the handoff and one to assess the handoff recipient.	Handoff evaluation tools: • Well-received by participants • Ease of use without formalized training • Provided data about a wide range of communication competencies • Discriminated well between experienced and inexperienced clinicians. • Provided an opportunity for evaluators to identify systems failures impeding the handoff process.	4 C
Petrovic, Aboumatar, Baumgartner, Ulatowski,	To evaluate the impact of a standardized handoff process on patient	Prospective, unblinded intervention study.	N=238 health care practitioners during the transfer of care of 60 patient.	• Presence of handoff core team members at the bedside.	• Presence of handoff core team members at the bedside increased from 0% at baseline to 68% after intervention	1 B

Moyer, et. al, 2012	care and provider satisfaction.			• % of missed information in the surgery and anesthesia report. • Evaluation of handoff satisfaction scores among ICU nurses.	decreasing the number of parallel conversations. • A decreased from 26% to 16% (*p* 0.03) of missed information in surgery report. • No significant change (19% to 17%, $p > 0.05$) in the % of missed information in the anesthesia report • An increase from 61% to 81% in handoff satisfaction scores among ICU nurses. • 1minute increase in the duration of handoff.	
Petrovic, Aboumatar, Scholl, Gill, Krenzischek, et. al, 2015	To evaluate a new perioperative handoff protocol in the adult PACUs. Included handoff team members (Anesthesia, Surgery, OR nurse, ICU or PACU provider and nurse) in a step wise protocol for handoff: OR team announcing patient, monitor-line setup, Surgery gives report, Anesthesia gives report, and ICU or PACU team clarifying remaining issues.	Prospective, unblinded cross-sectional study.	N=103 handoffs were observed (53 pre-intervention and 50 post intervention).	• 53 perioperative handoffs observed. • Data collected daily by a trained observer 2 week after implementation • 50 consecutive handoffs were observed.	• Mean number of defects per handoff decreased from 9.92 to 3.68 ($p = .01$). • Mean number of missed information items from the surgery report decreased from 7.57 to 1.2 items per handoff and from 2.02 to 0.94 ($p = .01$) for the anesthesia report. • Decrease in technical defects from 0.34 to 0.10 ($p = .04$). reported by unit nurses. • Surgeon verbal reports increased from 21.2% to 83.3%. • Mean duration of handoffs increased by 2 minutes ($p = .01$), the average time from patient arrival at PACU to handoff start was reduced by 1.5 minutes ($p = .01$). • Handoff satisfaction improved significantly among PACU nurses.	6 B

					• Implementation of handoff protocol met with improved information sharing and reduced handoff defects.	
Riesenberg, Leitzsch, & Cunningham, 2010	To conduct a systematic review of articles that focused on nursing handoffs, conduct a qualitative review of barriers to and strategies for effective handoffs, and identify features of structured handoffs that have been effective.	Systematic review	• Systematic review conducted of English-language articles, published between January 1,1987, and August 4,2008, that focused on nursing handoffs. • 95 articles met the inclusion criteria.	Conducted a systematic review that focused on nursing handoffs in the United States. .	• Barriers to effective handoffs in eight major categories and strategies for effective handoffs in 7 major categories were identified per content analysis (communication skills, standardized strategies, technologic solutions, environmental strategies, training and education, staff involvement, and leadership). • 20 articles involved research on nursing handoffs. • 85% of the research studies focused on nursing handoffs. • 50% of the research studies included measures of handoff effectiveness. • Little evidence found to support the use of any specific structure, protocol, or method. • Suggested areas for further nursing handoff research (knowledge, attitudes, skills, process outcomes, and clinical outcomes). • Situation, Background, Assessment, Recommendation (SBAR) was cited most frequently.	1 B
Rose & Newman, 2016	To identify key factors affecting patient safety during the process of postoperative handovers, a scoping	Scoping review	• 23 articles were selected with results limited to January 2004	Conducted a scoping review to obtain a broad view and perspective of the literature pertaining to	• The standardization of information has allowed for improved provider satisfaction with the transfer processes through an increase in the	4 B

	review was conducted.		through March 2015. • No randomized controlled trials. • Utilized the Social Ecological Model to provide a framework to systematically identify interrelated factors influencing information transfer.	postoperative handovers.	amount of transferred information. • Suggested future research to link the quality of postoperative handoff to patient specific outcomes.	
Segall, Bonifacio, Schroeder, Barbeito, Rogers, Thornlow, & Mark, (2012).	To review the literature and summarize process and communication recommendations of handover of care from the operative room to the post anesthesia or intensive care unit.	Systematic Review	31 articles were selected with results limited to 2000 through 2011.	Conducted a systematic review to summarize process and communication recommendations of handover of care from the operative room to the post anesthesia or intensive care unit.	• Recommendations broadly supported: standardized processes, completion of urgent clinical tasks prior to handoff, allow only patient specific discussions during handovers, all team members present for handovers, and provide coaching in team communication.	1 B
Staggers & Blaz, 2013	To synthesize outcomes from research on handoffs to guide future computerization of the process on medical and surgical units.	Integrative literature review	30 articles were selected with results limited to 1980 through March 2011.	Conducted an integrative literature review that focused on handoffs to guide future computerization of the process on medical and surgical units.	• Verbal handoffs serve important functions beyond information transfer and should be retained. • From a patient-centered perspective, greater consideration is needed on analyzing handoffs. • Methods of hand off should be highly tailored to nurses and their contextual needs. • Current preference for bedside handoffs is not supported by available evidence. Additional research is needed.	5 B

					• Specific handoff structure for all units may be less important than having a structure for contextually based handoffs. • Research on pertinent information content for contextually based handoffs is an urgent need. Without it, handoff computerization is not likely to be successful.	
Tapia, Fallon, Brandt, Scott, & Suliburk, 2013	To investigate current handoff methods at our center in order to develop an effective structured handoff process.	Prospective study	Conducted at two hospitals with large in-house patient censuses. N=86 handoffs observed.	• To define current practices and future directions, resident focus groups were utilized. • Direct observation handoff analysis tool was developed to study time spent in handoffs, content, quality, and number of interruptions.	• 86 handoffs observed by trained medical students. • 63% and 54%, survey response rates among junior and senior residents. • Average daily patient census was 36 (+/- 10) patients with an average handoff time of 12 9 min. There were 1.5 (+/-) 1.8 interruptions per handoff. • The majority of handoffs were unstructured. Based on information given in the handoff, junior residents had a 58% rate of incompletion of the assigned tasks and 54% incidence of being unable to answer a key patient status question. • Current handoffs are primarily unstructured, with significant deficits. • Determination of key elements of an effective handoff coupled with evaluation of existing deficiencies in our program is essential in developing an institution-specific method for effective handoffs.	6 B

					• Utilization of the mnemonic PACT (Priority, Admissions, Changes, Task) to standardize handoff communication is recommended.	
Welsh, Flanagan, & Ebright, 2010	To examine two approaches to nursing end- of-shift reports both taped and written. To identify specific factors limiting and facilitating handoffs.	Qualitative study (considered a pilot study)	N= 20 nurses across 3 inpatient units were interviewed using a semi structured format.	Nurses interviewed and asked about the current reporting process, the limitations, the elements that helped, and ideas for improvement.	• 6 barriers and 4 facilitators to effective nursing end-of-shift reports were revealed via analyses. • 80% of participants (16/20) reported that too little information was conveyed in the end-of-shift report • 50% of participants (10/20) reported too much information can also be a barrier. • The inability or limited opportunity to ask questions of the outgoing nurse was mentioned by 35% (7/20) of participants as a barrier. • 50% of nurses (10/20) stated the quality of report varies with the nurse giving it. • 35% of participants (7/20) mentioned equipment failures as a barrier to end-of-shift reporting. • Although 2 respondents mentioned that they did not miss face-to-face conversation as part of the reporting process, 30% (6/20) mentioned they preferred having a face-to-face conversation. • Interruptions were mentioned by 20% of participants (4/20) as a barrier.	6 B

					• The most frequently cited facilitator was the value of ‘‘pertinent’’ content in the end-of-shift report. • 45% (9/20) of participants mentioned the value of shift notes and having space on end-of-shift documents for note-taking during report and during the shift. • 25% (5/20) of participants mentioned the value of having a checklist of content to include in the end- of-shift report.	

Appendix C

Postoperative Handoff Tool Lesson Plan

Learning Objectives	Content Outline	Method of Instruction	Time Spent	Method of Evaluation
• To understand the necessity of a structured postoperative handoff process and tool. • To correctly utilize the postoperative handoff tool. • To verbalize the postoperative handoff process.	• Explain the importance of postoperative handoff tool and process. (3 min) • Explain and describe the postoperative handoff tool format. (2 min) • Explain the postoperative handoff tool process. (3 min) • Practice use of postoperative handoff tool. (5 min) • Conclude with questions and answers with a brief summary (3 min)	• Lecture • Return demonstration.	• 15-20 minutes	• Verbalize the need of a postoperative handoff tool and process. • Verbalize handoff process. • Correctly return demonstrate use of postoperative handoff tool.

Appendix D

Postoperative Handoff Satisfaction Survey

Postoperative Handoff Satisfaction Survey

		Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
1	How satisfied are you with the current postoperative handoff process in the PACU?					
2	How satisfied are you with the current postoperative handoff tool being utilized within the PACU?					
3	How satisfied are you with the usefulness of the current postoperative handoff tool in nurse to nurse sign out?					
		Always	Usually	About Half the Time	Seldom	Never
4	How often do you feel that you have a firm understanding of the goals of care after postoperative handoff? For example: Blood pressure goals, heart rate goals, frequency of neurovascular checks, location of flap site, etc...					
5	How often do you need to contact the surgical teams to clarify goals of care after postoperative handoff?					
6	How often do you feel that you have a firm understanding of the actual procedure performed after postoperative handoff?					
7	How often do you feel included in the postoperative handoff?					
8	Do you feel comfortable asking questions during the postoperative handoff ?					
9	Do you feel that all of your questions are answered during the postoperative handoff?					
10	How often do you feel that you are too busy with routine activities to stop and participate is postoperative handoff?					
11	How often do you feel that you are too busy with urgent activities to stop and participate is postoperative handoff?					
12	How often do you use the current postoperative handoff form in nurse to nurse sign out?					
13	Do you perceive a formalized postoperative handoff tool as being important?					

Appendix E

Completed PACU Postoperative Handoff Education Tool

Completed PACU Postoperative Handoff Education

	Name	Completed Education
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		

Appendix F

Postoperative Handoff Tool Audit Form

Postoperative Handoff Tool Audit Form

Patient Number	**Date of Audit**	**Postoperative Handoff Tool Utilized (Yes or No)**	**Postoperative Handoff Completed Correctly (# items/# items)**	**Any complications with utilization of postoperative handoff tool? If yes, please list complications.**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Appendix G

Approval Letter for Utilization of Postoperative Handoff Satisfaction Survey

UNIVERSITY of MARYLAND
MEDICAL CENTER

June 2, 2018

To Whom It May Concern:

Stephanie Katzer is currently enrolled in a Doctor of Nursing Practice Program through The University of Maryland School of Nursing. She is completing a capstone project within the Postoperative Division at The University of Maryland Medical Center entitled "Postoperative Handoff Tool Implementation in a Post Anesthesia Care Unit." She is utilizing a satisfaction survey tool formally developed to measure satisfaction with postoperative handoff in the Surgical Intensive Care Unit at the University of Maryland Medical Center. This letter is to serve as authorization to utilize the afore mentioned satisfaction survey tool for the purposes of her capstone project.

Respectfully,

Eleanor Dunlap, CRNP

Eleanor Dunlap, CRNP
Surgical Intensive Care Unit
University of Maryland Medical Center
22 South Greene Street
Baltimore, Maryland 21201
410-328-6454: edunlap@umm.edu

Member of the University of Maryland Medical System
Affiliated with the University of Maryland School of Medicine

Appendix H

Revision 2: PACU Postoperative Handoff Tool

ETA________ **PACU Postoperative Handoff Tool (Revision 2)**

Service/Contact #: ______________________ **OR #**________

Postop Destination:_________________________________

Diagnosis: _________________________________

Procedure: _________________________________

____

Patient Sticker

HPI:

Dressings, Drains & Lines:

Type	Location	Type	Location

HD Goals:

SBP	
MAP	
HR	

- ☐ PACU In Time: ________
- ☐ ID Band Verified
- ☐ Blood Band Verified
- ☐ Family Notified: **yes/no**

Allergies/Isolation:

I&Os:

IVF:	
Albumin:	
PRBC:	
FFP:	
Platelets:	
Cell saver:	
Cryo:	
EBL:	
UOP:	
Ascites:	

Intra-op Medications:

Abx	
Anesthetics	
Reversed?	
Pain	

Postoperative Care:

IVF	
UOP Goal	
Abx	

Diagnostics Needed:

XR	
CT	
MRI	
Labs?	

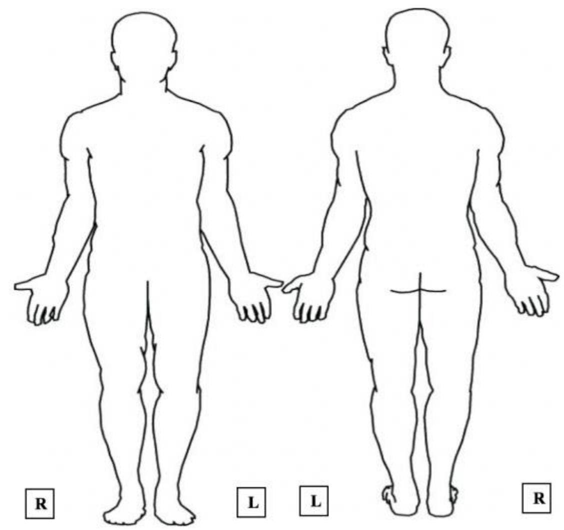
Extubation Plan:

Diff Intubation	Yes/No
Wake & Wean	
Keep Intubated?	

Notes/Postop Plan:

Reminders:

- ☐ **Assign RN**
- ☐ **OR Handoff**
- ☐ **Education**
- ☐ **Care Plan**
- ☐ **Handoff**
- ☐ **Events**
- ☐ **Verify**
- ☐ **Anes Signout**
- ☐
- ☐



Notes:

For PACU use only. This document is not part of the medical record, do not place in patient chart.

Appendix I

Revision 1: PACU Postoperative Handoff Tool

PACU Postoperative Handoff Tool (Revision 1)

Service/Contact #: ______________________OR #________

Postop Destination:_________________________________

Diagnosis: ____

Procedure: ____

____

Patient Sticker

HPI:

Dressings, Drains & Lines:

Type	Location	Suction	Empty qhr

HD Goals:

SBP	
MAP	
HR	

- ☐ PACU In Time: ________
- ☐ ID Band Verified
- ☐ Blood Band Verified
- ☐ Family Notified: yes/no

Allergies/Isolation:

I&Os:

IVF:	
Albumin:	
PRBC:	
FFP:	
Platelets:	
Cell saver:	
Cryo:	
EBL:	
UOP:	
Ascites:	

Intra-op Medications:

Abx	
Anesthetics	
Reversed?	
Pain	

Postoperative Care:

IVF	
UOP Goal	
Abx	

Diagnostics Needed:

XR	
CT	
MRI	
Labs?	

Pre-Op Neuro Function:

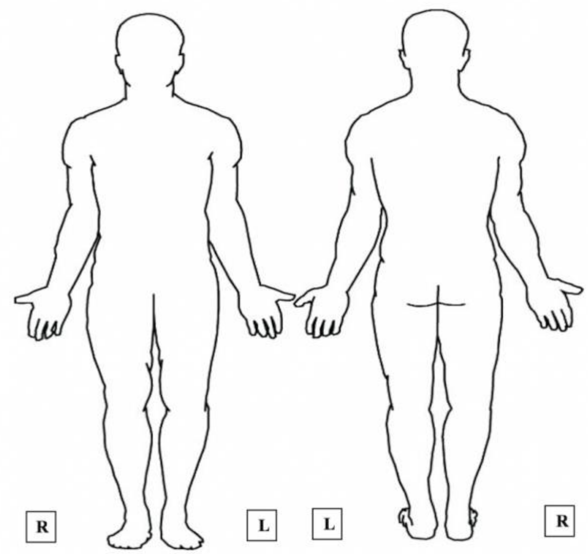
Extubation Plan:

Difficult Intubation	Yes/No
RASS Goal	
Wake & Wean	
AM Rounds	
Keep Intubated?	

Notes/Postop Plan:

Reminders:

- ☐ **Assign RN**
- ☐ **OR Handoff**
- ☐ **Education**
- ☐ **Care Plan**
- ☐ **Handoff**
- ☐ **Events**
- ☐ **Verify**
- ☐
- ☐
- ☐



Notes:

For PACU use only. This document is not part of the medical record, do not place in patient chart.

Appendix J

Institutional Review Board Not Human Subject Research Determination

University of Maryland, Baltimore
Institutional Review Board
Phone: (410) 706-5037
Fax: (410) 706-4189
Email: hrpo@umaryland.edu

NOT HUMAN RESEARCH DETERMINATION

Date: July 30, 2018

To: Joan Davenport
RE: HP-00081583
Name: Postoperative Handoff Tool Implementation in a Post Anesthesia Care Unit

This letter is to acknowledge that the UMB IRB reviewed the information provided and has determined that the submission does not require IRB review. This determination has been made with the understanding that the proposed project does not involve a systematic investigation designed to develop or contribute to generalizable knowledge **OR** a human participant (see definitions below).

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are human subject research in which the organization is engaged, please submit a new request to the IRB for a determination.

Definitions –

Human Research: Any activity that either:

- Is "Research" as defined by DHHS and involves "Human Subjects" as defined by DHHS ("DHHS Human Research"); or
- Is "Research" as defined by FDA and involves "Human Subjects" as defined by FDA ("FDA Human Research").

Research as Defined by DHHS: A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

Research as Defined by FDA: Any experiment that involves a test article and one or more human subjects, and that meets any one of the following:

- Must meet the requirements for prior submission to the Food and Drug Administration under section 505(i) of the Federal Food, Drug, and Cosmetic Act meaning any use of a drug other than the use of an approved drug in the course of medical practice;
- Must meet the requirements for prior submission to the Food and Drug Administration under section 520(g) of the Federal Food, Drug, and Cosmetic Act meaning any activity that evaluates the safety or effectiveness of a device; OR
- Any activity the results of which are intended to be later submitted to, or held for inspection by, the Food and Drug Administration as part of an application for a research or marketing permit.

<u>Human Subject as Defined by DHHS:</u> A living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through Intervention or Interaction with the individual, or (2) information that is both Private Information and Identifiable Information. For the purpose of this definition:

- Intervention means physical procedures by which data are gathered (for example, venipuncture) and manipulations of the subject or the subject's environment that are performed for research purposes.
- Interaction means communication or interpersonal contact between investigator and subject.
- Private Information means information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record).
- Identifiable Information means information that is individually identifiable (i.e., the identity of the subject is or may readily be ascertained by the investigator or associated with the information).

<u>Human Subject as Defined by FDA:</u> An individual who is or becomes a subject in research, either as a recipient of the test article or as a control. A subject may be either a healthy human or a patient. A human subject includes an individual on whose specimen (identified or unidentified) a medical device is used.

Please keep a copy of this letter for future reference. If you have any questions, please do not hesitate to contact the Human Research Protections Office (HRPO) at (410) 706-5037 or HRPO@umaryland.edu.