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Development of a Standardized Transfer Acceptance Bundle to Improve Team Collaboration during the Transfer from the Pediatric Intensive Care Unit to the Surgical Unit

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Abstract

Background/Significance: The project site utilizes a high reliability framework to support safety and quality improvement. Although the infant-toddler surgical unit frequently accepts transfers of surgical patients from the ICU, there was no standardized process in place.

Purpose: The purpose of this project was to develop and implement a standardized transfer acceptance process bundle for patients transferring from the ICU to the inpatient surgical unit.

Methods: This Quality Improvement project utilized a Plan-Do-Study-Act model to guide the project implementation. The standardized transfer acceptance process bundle included APRN use of the I-PASS hand-off tool, an RN and APRN bedside huddle at the time of transfer, and an APRN transfer documentation. Pre and post intervention collaboration and satisfaction scores were measured using the Collaboration and Satisfaction about Care Decisions survey. Data were collected to evaluate whether all components of the bundle were completed.

Results: Of the 53 patient transfers during the pilot period, the bedside huddle at the time of transfer was completed for 75.5% and the APRN transfer acceptance documentation was completed for 73.6%. The components of collaboration scores and the overall CSACD tool scores for the combined RN and APRN staff were improved (components of collaboration p=.002; overall p = .003) by the implementation of this bundle.

Conclusion: The implementation of a standardized transfer acceptance bundle at the time of patient transfer from the ICU to the surgical unit improved staff collaboration and satisfaction during this critical transfer of care. This bundle aligns with the hospital's high reliability framework.

Keywords*: ICU readmission; ICU to surgical floor transfer; staff satisfaction with patient transfers, pediatric; I-PASS; huddle*

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Introduction

The constantly changing hospital environment paired with an increasingly acute patient population and rotating clinical staff makes hand-off communication a perpetual challenge. Despite a large body of evidence recommending interdisciplinary hand-offs for registered nurses (RNs) and physicians/advanced practice registered nurses (APRN), a lack of a standardized patient hand off puts patients at risk (The Joint Commission, 2017) . Patient transfers from the intensive care unit (ICU) to in-patient units remain a critical transition of care (Santosh et al., 2019) When incomplete and/or inappropriate patient hand offs occur, patient safety can be jeopardized (Shahian, 2017; Starmer, 2014).

The project site utilizes the High Reliability framework for continuous quality and safety improvement (The Joint Commission, 2021). A bundled approach which includes a standardized handoff communication process and the use of huddles helps the entire team have a clear understanding of the plan of care. The project site has implemented the use of the I-PASS hand-off method across the enterprise. I-PASS is a mnemonic tool which stands for Illness Severity – Patient Summary – Action List – Situational Awareness and Contingency Planning – Synthesis by Receiver. This verbal handoff tool gives a picture of the severity of the patient's illness, as well as a summary of the patient's history and hospital course, an action-list for follow-up needs, understanding of a contingency plan and an opportunity for receiver synthesis (Coffey et al., 2017; Starmer et. al, 2012).

There was a lack of standardized transfer acceptance processes among the surgical APRN group for patients transferring from the ICU to the inpatient surgical unit. There was also

inconsistent communication to the APRN when the patient arrived to the unit and an inconsistent time for collaborative communication between the APRN and RN.

Purpose

The purpose of this quality improvement (QI) project was to develop and implement a standardized transfer acceptance bundle for patients transferring from the ICU to the inpatient surgical unit.

The specific goals of this project were to:

1. Standardize the use of I-PASS hand-off tool during transfer acceptance from the ICU by APRNs receiving the transferring patient.
2. Implement a bedside huddle between RNs and APRNs at the time of patient transfer from ICU to inpatient surgical floor.
3. Implement standardized APRN documentation at time of transfer to document physical exam and summarize plan from ICU.
4. Improve RN and APRN satisfaction and collaboration around care following ICU transfer to inpatient surgical floor.
5. Reduce unanticipated ICU readmission (up to 48 hours after transfer).

Summary of project process

After reviewing the literature, the project leader developed a transfer acceptance bundle to implement upon transfer to accomplish the goals outlined above. The transfer bundle elements introduced included: standardizing the I-PASS hand-off tool specific to the pediatric surgical patient population (during transfer acceptance from the ICU by APRNs receiving the transfer patient), implementing a RN-APRN bedside huddle to clarify the patient's plan of care at the time of patient transfer from ICU and implementing a standardized APRN documentation at time

of transfer to document physical exam and summarize the plan of care. The goal of this transfer bundle was to improve communication, collaboration and nursing satisfaction and to reduce unanticipated ICU readmission (up to 48 hours after transfer).

Background

The project site has taken a proactive approach to safety using the high reliability safety framework. High reliability is a commitment to sustained high quality and safety and requires leadership's commitment to zero patient harm, a safety culture, and the use of improvement methods (The Joint Commission, 2021). Examples of high reliability at this hospital are the use of a standard communication process for verbal and written hand-offs (I-PASS), daily unit-based huddles, and documentation of the plan of care.

In 2006, one of the National Patient Safety Goals implemented by the Joint Commission on Accreditation of Healthcare Organizations (Joint Commission) was focused on safer hand-off communication, which then became a national standard in 2010 (The Joint Commission, 2017). In 2017, The Joint Commission issued a sentinel event alert to address the need for system wide changes to hand-off communication due to the risks of adverse patient events (The Joint Commission, 2017). These action items, which were released in The Joint Commission's *Targeted Solutions Tool (TST) for Hand-off Communications* (2014), were shared with all hospitals, included:

1. Demonstrating leadership's commitment to a safety culture and successful hand-offs;
2. Standardization of the institution's specific hand-off tool and subsequent training;
3. Face-to-face hand-off communication without interruptions;
4. The use of electronic health records;
5. Continuous evaluation to make improvements as necessary;

6. Sustaining best practices for hand-off;
7. Making quality hand-offs part of the safety culture (The Joint Commission Center for Transforming Healthcare, 2014).

While this hospital has introduced the I-PASS tool (Starmer et al., 2013) as a standard format for hand-off communication for providers and nurses during patient care transfers (ER to floor, service to service), the use of this handoff tool has not been standardized to the intensive care unit (ICU) to surgical team handoff process preceding transfer to the inpatient surgical unit. The ICU currently uses a version of the Formula One hand off method (Catchpole et al., 2007), which includes pre-handover communication, equipment and technology handover, and information hand-over, and was studied for surgical patients to improve hand-off between the operating room and the ICU (Catchpole et al., 2007).

However, the surgical advanced practice registered nurses (APRN) on the inpatient unit must translate this hand-off format into the I-PASS format for communication among the surgical unit APRNs in the project site's 24/7 APRN coverage model. The use of I-PASS has been shown to significantly decrease medical errors and preventable adverse events (Starmer et al., 2013). I-PASS has been instituted enterprise wide as the accepted hand-off communication method.

Clinical teams' bedside huddles improve staff collaboration and empower nurses in particular to speak up for patient safety (Goldenhar et. al., 2013). Huddles create a safe environment to discuss patient safety concerns, which is a priority for a high reliability organization (Goldenhar et al., 2013).

Additionally, while the surgical team frequently accepts ICU transfer patients, the use of a collaborative bedside evaluation at the time of transfer was not a standard practice for the APRNs and RNs. The synthesis element of the I-PASS hand-off tool was also not consistently

done when the APRN received sign-out from the ICU. Additionally, there was no standard documentation by the inpatient surgical unit's APRN at the time of transfer. Documentation of patient encounters, such as at the time of transfer from the ICU, are critical not only to ensure patient safety and to communicate the plan of care to the team, but also protect the APRN from potential malpractice litigation (Dolan & Farmer, 2018).

The ICU to inpatient surgical unit process is initiated by the ICU resident or fellow with a written hand-off sent via secure email to the entire surgical team, including the APRNs on the surgical unit. This email details the patient's history, hospital course and plan of care in the Formula One method. The ICU provider then pages the APRN, prompting the APRN to call the ICU provider for a verbal hand-off of the patient awaiting transfer. The ICU provider initiates a "transfer from ICU" plan in the electronic medical record (EMR) and the APRN writes an EMR "transfer accept" order. Floor RNs receive a phone call from the ICU RN to complete handoff. If the RN has concerns about the patient's status before transfer, the APRN and RN can go to the ICU to evaluate the patient prior to transfer; however, this is not the common practice.

The time of the actual transfer to the surgical unit is typically determined by the ICU's need for a bed, bed availability on the unit and staffing. The RN is responsible for notifying the APRN upon the patient's arrival to the surgical unit. Frequently the APRN was not notified of the arrival, or the patient arrived during the APRN evening sign-out, delaying the bedside APRN evaluation. Traditionally, the accepting APRN was expected to see the patient following transfer, but there was a lack of a standardized method as to when and if patients were seen by the APRN. Registered nurses and APRNs frequently heard varying plans for the patient's care; therefore, bedside collaboration upon arrival from the ICU allows the patient's care plan to be discussed comprehensively by the entire team involved, including the RN, APRN and family if available.

Review of the Literature

Search Process

A comprehensive search of the literature was conducted using the Current Index of Nursing and Allied Health Literature (CINAHL) and PubMed database. Key words for the literature search included: ICU readmission; ICU to ward transfer; pediatric (Boolean phrase – includes child or children or infant or adolescent); I-PASS; huddle (Boolean phrase includes safety huddle or gathering); bedside. Exclusion criteria limited results published during 2015-2021 and in the English language. Exceptions were made for sentinel articles pertinent to the I-PASS search that was published prior to 2015. Using the key words "ICU readmission" in the CINAHL database, 56 articles were retrieved. When the key word "pediatric" was added to "ICU readmission" in CINAHL, only 11 articles resulted. Using the key words "ICU to ward transfer" in the CINAHL database, 37 articles were retrieved, but only four articles were retrieved when "pediatric" was added. In the PubMed database, 707 articles were found with the search term "ICU readmission."

When the key word "pediatric" was added to "ICU readmission," results were decreased to 116 articles. When the key word "ICU to ward transfer" was searched in PubMed, 168 articles were found, which decreased to 30 with "pediatric" as a secondary search term. When "I-PASS" was searched in the CINAHL database, 37 articles were retrieved. Many of these articles referenced the sentinel I-PASS research studies, which were then obtained for review and reference. With the key word "huddle (Boolean phase huddle or safety huddle or gathering), 3140 results were returned in the CINAHL database, but only 38 articles were retrieved after adding "bedside" as a secondary search term. Additional articles were retrieved and reviewed based on a hand search.

For each database search, titles and abstracts were skimmed to determine relevance of articles to this project. Articles were eliminated for being solely related to hospital readmissions, other pediatric issues, or hand-offs between specialty groups (i.e. OR), and other validity concerns. While many of the articles were conducted in adult settings, these articles were not excluded solely for this reason, as research in pediatric settings was much more limited.

The articles were critiqued using the John Hopkins Nursing Evidence-Based Practice Model (Dearholt et al., 2012). Twenty-six articles were selected for this review of literature:

1. Five quasi-experimental studies or prospective cohort studies (Level II/Grades A-C) (Balamuth et al., 2017; Connor et al., 2019; Gajic et al., 2008; Starmer et al., 2013; Tam et al., 2018);
2. Nineteen retrospective cohort or qualitative studies (Level III/Grade A-C) (Al-Jaghbeer, 2016 et al.; Coffey et al., 2017; Connor et al., 2015; Coughlin et al., 2018; Edwards et al., 2013; Edwards et al., 2017; Goldenhar et al., 2013; Kaur et al., 2018; Kotsakis et al., 2016; Lazzara et al., 2016; Lee et al., 2015; Lin et al., 2018; McLellan et al., 2017; Melton et al., 2017; Parshuraam et al., 2009; Provost et al., 2015; Santamaria et al., 2017; Santosh, 2019 et al.; Starmer et al., 2014);
3. One expert consensus panel guideline (Level IV/Grade A) (Joint Commission, 2021) and
4. One quality improvement project (Level V/Grade B) (Storey et al., 2018). The following themes were identified from the literature specific to the topic of creating a standardized transfer acceptance process.

Unplanned ICU Readmissions

Readmissions to the ICU are possibly preventable with approximately 11.8% of ICU readmissions within 24-48 hours after transfer commonly related to short index ICU stays and

shorter time on the inpatient floor (Al-Jaghbeer et al., 2016). Respiratory failure was cited as the most common cause of ICU readmission in the adult population (Lin, et al., 2018). Respiratory, infectious or neurological problems were present in >25% of pediatric ICU readmissions (Edwards et al., 2013). Complex chronic conditions in children were associated with earlier readmission to the ICU, and children with more chronic conditions had more unplanned readmissions (Edwards et al., 2017).

Index ICU length of stay greater than 48 hours, increased cumulative pediatric ICU time over the past two years, discharge from a cardiac PICU, and increased pediatric logistic organ dysfunction or bedside pediatric early warning signs on initial ICU discharge were significantly associated with unplanned ICU readmissions (Kotsakis et al., 2016). Additionally, supplemental oxygen use and Glasgow Coma Scale ratings under 15 were associated with an increased risk for ICU readmission (Kaur et al., 2018). Unplanned readmissions to the ICU were associated with higher mortality rates (Edwards, et al., 2017; Lee, et al., 2015; Santamaria, et al., 2017).

Prediction Tools for ICU Readmission

Several studies explored methods to predict unplanned ICU readmission risks (Gajic et al., 2008; Kaur et al., 2018; Lee et al., 2015; McLellan et al., 2017; Parshuraam, et al. 2009). The Stability and Workload Index for Transfer (SWIFT) tool was designed by the Mayo Clinic to predict ICU readmissions risk for adult patients at the time of transfer from the ICU (Gajic et al., 2008). The Prediction of PICU Early Readmission (PROPER) system, which aimed to predict risk in the pediatric population, was found to have an 81% sensitivity to detect unplanned readmissions (Kaur et al., 2018).

The PROPER score helped to identify characteristics that increased risk of early ICU readmission for pediatric patients and score them based on these characteristics, serving as a

screening tool to identify patients who are at higher risk. These characteristics included younger age (<1), malnourished patients, patients requiring supplemental oxygen or patients with Glasgow Coma Scale scores less than 15 at the time of transfer (Kaur et al., 2018).

The Acute Physiology and Chronic Health Evaluation (APACHE II) score was developed to classify patient severity and predict hospital mortality (Lee et al., 2015). Scores are usually taken within 24 hours of ICU admission and again 24 hours before ICU discharge, and are significant in predicting early ICU readmission of under 48 hours, post-ICU mortality (Lee et al., 2015), as well as predicting in-hospital mortality (Lin et al., 2018).

While there are several tools available to evaluate the patient's risk of ICU readmission at the time of ICU discharge, there is no agreement on which tool best predicts ICU discharge readiness (Lee et al., 2015). The Pediatric Early Warning System (PEWS) was developed to quantify severity of illness in hospitalized pediatric patients, and subsequently recognize children who are critically ill within an hour of identification (Parshuraam et al., 2009).

The Children's Hospital Early Warning System (CHEWS) was modified from the PEWS to create a common language and approach to escalate care for children exhibiting signs of clinical deterioration, and was shown to have increased warning time to allow for timely interventions (McLellan et al., 2017). The CHEWS tool utilizes green-yellow-red categories based on factors such as behavior/neuro, cardiac, and respiratory concerns, staff and patient/family concerns (or lack of family at the bedside), and the yellow and red categories indicate a need for further intervention and evaluation (McLellan et al., 2017).

The Complexity Assessment and Monitoring for Optimal Outcomes (CAMEO) tool was developed to measure nursing workload in the pediatric critical care setting, and was found to support nursing staffing needs based on acuity of patient needs (Connor et al., 2015). While

CAMEO was initially studied in the cardiac ICU and then expanded to multi-specialty ICUs; it has been adapted to include the inpatient pediatric population because it helps to quantify the acuity and complexity of the cognitive nursing workload (Connor et al., 2019).

Hand-off Communication Tools

Improving the transfer of care processes was described in two articles (Coughlin et al., 2018; Storey et al., 2018). A multidisciplinary checklist helped to establish whether a neuro-ICU patient was at high or low risk for ICU readmission (Coughlin et al., 2018). If the patient was deemed high risk, the transfer process was more extensive, and included a required evaluation by a doctor within 1 hour of arrival to the floor and by a respiratory therapist within 2 hours. Additionally, these patients were visually identified to the unit by a bright green checklist on their door for the first 72 hours after transfer (Coughlin et al., 2018).

A transfer bundle for high risk pediatric cardiac ICU patients, that included face-to-face hand-off between the ICU and floor RN, smaller nurse-patient ratios during the first 24 hours after transfer, and daytime and nighttime rounds at the patient's bedside with the provider, charge RN and bedside RN was developed to reduce the CICU readmissions rates within 48 hours, while decreasing length of stay and costs and improving patient care experiences (Storey et al., 2018). This bundle was very well received by the floor team, with 94% bundle compliance during the pilot and a decrease in ICU readmissions within 48 hours from 2.8/100 cases in the baseline period to 1.8/100 in the intervention period (Storey et al., 2018).

A standardized hand-off communication tool was identified by residents as necessary as a tool for ICU to ward transfer communication (Santosh et. al., 2019). Many providers interviewed reported inadequate hand-off communication prior to introduction of specific communication tools. Mnemonics to include various pertinent pieces of the patient's medical history, hospital

admission and ongoing planning were common (Lazzara et al., 2016; Starmer et al., 2013; Tam et al., 2018), and were generally found to be helpful and well-received by providers.

The I-PASS tool uses a mnemonic that was developed to standardize hand-off communication using five points. The five components include Illness Severity, Patient Summary, Action List, Situational Awareness, Contingency Planning, and Synthesis by the Receiver. I-PASS was first introduced as a verbal and written hand-off communication tool in a pilot study at Boston Children's Hospital (Starmer et al., 2012). The implementation of this mnemonic during provider hand-off was found to be associated with a significant decrease in medical errors as well as a decrease in preventable adverse events (Starmer et. al., 2014). Providers also reported that there was a significant increase in the use of structured hand-off tools for both verbal and written communication (Starmer et al., 2014), and recognized that structured training added value to their hand-off (Coffey et. al., 2017).

Bedside Huddles to Promote Collaboration

High reliability encompasses a safety culture committed to zero patient harm, and is a top priority for hospitals across the country (The Joint Commission Center for Transforming Healthcare, 2021). The term *"huddle"* refers to groups of people who meet in a regular manner, and often hospitals use this model to allow for interdisciplinary communication (Melton et al., 2017). Patient safety huddles have been shown to improve communication and empowerment of staff to voice concerns over patient safety without any reported challenges to work flow for staff members (Goldenhar et al., 2013). When huddles are utilized, concerns are more likely to be resolved in a timely manner (Melton et. al., 2017).

In hospitals that have committed to huddles as part of their routine practice, the hospital improved reliability as an organization by demonstrating a willingness to create a space for

constructive conversation and continuously reflect upon challenges presented that threaten patient safety (Provost et al., 2015). When trigger tools such as sepsis alerts were utilized, bedside huddles increased the number of patients who were standardized into a sepsis protocol (Balamuth et al., 2017).

In many pediatric cases, unplanned ICU readmissions are correlated with chronic conditions and many tools exist that may predict which children are more at risk for readmission (Edwards et al., 2017; Gajic et al., 2008; Kaur et al., 2018; McLellan et al., 2017; Parshuraam et al., 2009). Various standardized hand-off tools have been developed to improve communication between health care providers and ultimately improve patient outcomes. Interdisciplinary huddles in the hospital allow staff to feel empowered to speak up for patient safety and improve collaboration.

Evidence Based Practice

A review of the literature highlighted the use of standardized hand-off communication, readmission prediction tools and bedside huddles as methods to mitigate unplanned ICU readmissions. Quality improvement projects that combined interventions at the time of transfer from the ICU to the floor were well-received by the teams (Coughlin et al., 2018; Storey et al., 2018). As there was no standardized transfer process at the project site, a transfer acceptance bundle including a standardized I-PASS hand-off, a collaborative bedside huddle, and standardized APRN transfer documentation was developed for implementation upon arrival of the patient from the ICU.

Theoretical Framework

The Diffusion of Innovation Theory was utilized to guide this quality improvement project (Kaminski, 2011) (Appendix A). This theory is a change model which pertains to the process of how people adopt changes in a specific idea or practice change (Rogers, 2003). There are six

categories of the adopters to this practice change. Commonly, there are a few participants in the group, deemed the innovators or “technology enthusiasts”, who are open to the new idea and will adopt the new process quickly by being change agents. Nursing educators, as well as leadership, serve in this capacity and help employ project champions for this project. These project champions, known as early adopters or “visionaries”, tend to serve as role models within their peer group and can willingly trial the change process.

The early majority “pragmatists” of the group tend to make slow and steady progress with minimal risk, while avoiding complexity. These participants are most likely to consistent of the RN and APRN staff that work full-time and are most involved in the flow of the surgical unit and the staff groups.

The late majority is typically conservative and skeptical, yet tends to respond to peer group pressure. Lastly, the laggards or skeptics tend to stay isolated from popular opinion, are resistant to change and suspicious of innovations. Older staff members, who are well-seasoned on this unit and comfortable with the daily flow, will likely be part of the late majority or laggard groups.

This theory promotes the importance of peer-to-peer communication and role modeling. After leadership support was obtained, the RN and APRN groups were first exposed to the process change in the knowledge stage. In the persuasion stage, certain group members became interested and sought out additional information to decide whether or not to buy into the process change in the decision stage. The members of the group decided if they would adopt the full process in the innovation stage, and those individuals who believed this process would be successful completed the confirmation stage (Kaminski, 2011; Rogers, 2003).

Methods

Goals and Objectives

The overall goal of this QI project was to implement a standardized transfer acceptance process bundle for patients transferring from the ICU to the inpatient surgical unit.

The specific objectives of this project were to:

1. Standardize the use of the I-PASS hand-off tool during transfer acceptance from ICU by APRNs receiving the transfer patient.

   The desired outcome was that the I-PASS tool would be used with every hand-off. An I-PASS audit (Appendix G) was developed to track whether I-PASS was used, and if so, to determine whether each of the five elements of the I-PASS tool were included in the handoff. The APRN project champions performed audits of the providers' handoffs. APRNs were also asked to perform self-audit.

2. Implement a bedside huddle between RNs and APRNs at the time of patient transfer from the ICU to the inpatient surgical unit;

   The outcome was that the APRN would be notified upon the patient's arrival to the unit during the months of October, November and December 2021. The APRN and RN would then huddle at the bedside, and the huddle would be documented by the RN on the patient care flowsheet.

3. Implement a standardized APRN documentation at the time of transfer to document the physical exam and summarize the plan of care from the ICU;

   The APRN note template was shared with the APRN staff in September 2021 and then emailed to staff so that they could insert this template into their EMR during the implementation period.

4. Improve RN and APRN satisfaction and collaboration around care following ICU transfer to the inpatient surgical floor;

   The Collaboration and Satisfaction about Care Decisions (CSACD) REDCAP survey link was sent via secure email to APRN and RN staff pre-intervention in September 2021 and post-intervention in January 2022. Follow-up emails were sent to the APRN and RN staff two weeks later.

5. Reduce unanticipated ICU readmissions (up to 48 hours after transfer).

   The rate of ICU readmissions within 48 hours of discharge was calculated.

Project Site & Population

This project was implemented at an urban, quaternary, pediatric, academic medical center in the Northeast on the infant-toddler surgical unit. This unit routinely accepts patients from the emergency room, operating room, outpatient clinics, outside hospital transfers, and transfers from two ICUs, the Neonatal ICU and the Medical Surgical ICU.

Every general surgery patient who was transferred from these two ICUs to the infant-toddler surgical unit from October 4, 2021 to December 31, 2021 was included in this project. This unit was staffed by general surgery APRNs 24 hours per day, seven days per week. The staff participants in this project included the 17 surgical APRNs and 52 RNs on the surgical unit who provide care for all surgical patients who are transferred from the ICU.

Project Development & Implementation

This project was a quality improvement (QI) project that used the Plan-Do-Study-Act model (Institute for Healthcare Improvement [IHI], 2021) to serve as both a practice intervention and process improvement guided by the Diffusion of Innovation Theory (Kaminski, 2011; Rogers, 2003). This project was supported by the general surgery inpatient APRN group, the nurse

manager of the infant-toddler surgical unit, the Director of Nursing Research for Surgical Programs, the Director of Surgical Patient Care Services and surgical services nurse educators.

This project leader met with RN and APRN leadership to garner support and identify the best candidates for project champions; four RN and three APRN champions were identified. These project champions were full time RN and APRN staff members that had significant experience on this surgical unit and were knowledgeable with the current process flow. Project champions were subsequently invited and agreed to participate in the project.

A standardized transfer acceptance process bundle was created for RNs and APRNs at the time of patient transfer from the ICU to the surgical unit (Appendix B), including an I-PASS handoff template for provider communication (Appendix C), a bedside huddle upon arrival to the unit, and an APRN transfer acceptance note (Appendix D).

An educational PowerPoint presentation outlining the new transfer acceptance process was developed and presented to the APRN and RN staff on the surgical unit in-person in two sessions during the month of September 2021. Project champions were introduced during educational sessions to help clarify questions. Twelve RNs were present for the in-person educational sessions. This APRN also attended a mandatory RN staff meeting to discuss the QI pilot, which included 48 RN participants and attended an APRN leadership meeting in October 2021 to discuss the project, which five of the level II APRNs attended. This meeting was delayed until October due to the cancellation of the September staff meeting. This APRN additionally discussed the QI project with ten of the surgical APRNs in small group sessions.

The educational PowerPoint was shared via a NetLearning platform for all RN and APRN staff that were unable to attend in-person education sessions. Using the NetLearning platform

allowed the project leader to also track the number of participants who viewed the PowerPoint; 41 RNs and 13 APRNs reviewed the PowerPoint on the NetLearning platform.

The CSACD (Baggs, 1994) instrument was distributed to the RN and APRN staff via a secure internal REDCAP survey via email link to protect confidentiality (Appendix E). The REDCAP survey also included demographic questions including staff role, experience, and certifications.

On October 4, 2021, the QI project was initiated on the inpatient surgical unit. The RN who accepted the patient to the surgical unit was responsible for notifying the APRN of the patient's arrival on the unit, so that the RN, APRN and family, if present, could huddle at the bedside. To track patient transfers to the inpatient unit, the project leader tracked and reviewed emails that were routinely received by the surgical team when patients are transferred to the surgical unit. An electronic codebook was developed and a unique patient identifier was assigned to each patient transferred to the unit. This project leader reviewed patient charts for those transferred to the unit to collect data related to the transfer process and the bundle process adherence.

The PDSA cycles were completed every two weeks, and the project leader evaluated the strengths and weaknesses of implementation during this time. This project leader met with the APRN champions frequently, to identify opportunities to improve the use of I-PASS and audit handoffs. Based on their feedback, a reminder email was sent to the APRN staff encouraging I-PASS audits. Additionally, the project lead partnered with information technology (IT) to include an I-PASS audit checklist in the APRN transfer note template. Unfortunately, this template could not be implemented until after project completion.

The QI project was completed on December 31, 2021. A follow-up email was sent to all APRN and RN staff asking them to complete the post-intervention CSACD survey. This survey closed on January 31, 2022.

Measurement Instruments & Data Analysis

In order to measure the outcomes of this DNP project, multiple measurement instruments were used.

The I-PASS audit tool was adapted from the tool developed by The I-PASS Institute/Boston Children's Hospital (2015) and was used to audit whether the five essential components of the I-PASS handoff tool were used by the APRN accepting the ICU transfer patient (Appendix F). These audits were analyzed using descriptive statistics.

An ICU transfer data abstraction tool was created by the project lead to collect ICU patient transfer data including handoff times, time of transfer, huddle occurrence and APRN transfer acceptance note documentation (Appendix G). This included the documentation of each bundle element, including the IPASS hand-off, APRN/RN bedside huddle, and APRN transfer acceptance note. The ICU transfer data abstraction tool was analyzed using descriptive statistics.

The CSACD instrument (Baggs, 1994) is a nine question tool which measures collaboration and satisfaction among care providers about patient care decisions using a 7- point Likert scale. With the author's permission, this project leader adapted this instrument to specifically address interactions around ICU transfers. The first seven questions address collaboration, with six individual questions (1-6) evaluating the critical components of collaboration, followed by one question which measures global care collaboration (7). The final two questions (8-9) measure satisfaction; one specifically pertains to satisfaction about the decision making process and the other addresses satisfaction with the actual decision made. The CSACD has 93% reliability, and construct validity of the collaboration questions were supported and explained 75% of the variance in collaboration (Baggs, 1994) (Appendix E). The pre and post-intervention CSACD instrument surveys were analyzed using descriptive statistics and paired *t*-tests to compare

differences in group means. The mean score for the first six questions (1-6) that pertained to the components of collaboration was calculated. The mean score for question 7 which measures global collaboration was calculated separately. Similarly, the mean score of questions eight and nine which related to satisfaction was calculated. The total score of all nine questions was then calculated. These were then stratified by role (APRN and RN) and the means of the pre-intervention survey and the post intervention survey were compared.

A demographic data abstraction tool was developed to describe the demographic characteristics of the RN and APRN staff completing the CSACD instrument (Staff demographics data abstraction tool: Appendix H). The staff demographics data abstraction tool was analyzed using descriptive statistics.

No ICU readmissions occurred during implementation of this project.

Statistical analysis was conducted using IBM SPSS Statistics (Version 27) predictive analytics software.

Protection of Human Subjects

This project was approved by the hospital's Nursing Scientific Review as a quality improvement project. QI projects are exempt from the hospital Institutional Review Board (IRB) approval. The University of Massachusetts, Amherst (UMass) IRB approval was obtained prior to initiation of this quality improvement project. This was a minimal risk project with a potential breach of confidentiality which was mitigated by the data management plan, including protecting the data on an encrypted password protected computer and the use of the password protected Redcap database behind the BCH firewall.

An electronic code book that included a list of patients who were transferred to the infant-toddler surgical floor was used to assign a unique identifier and was stored on a password

protected computer. APRN and RN participation in pre- and post-implementation instruments was voluntary and confidential. No attempt was made to identify the staff members who participated in this survey. The survey results were stored in a password protected file in a secure REDCap database and only the project lead and mentor had access to the data. The findings will be presented in aggregate, internally and externally, in poster and podium presentations and peer reviewed publications. Data will be retained per hospital data retention policy.

Results

CSACD Survey Participant Demographics

The 52 RNs and 17 general surgery APRNs that work on this surgical unit were invited to participate in this project. Fifteen RNs (28.84%) and 12 APRNs (70.58%) completed the pre-intervention CSACD survey which are presented in Table 1.

Table 1

Relevant Clinical Experience for Pre-Intervention CSACD Survey Participants

	APRN n=12		RN n=15	
	Years on Surgical Unit	Years as RN	Years on Surgical Unit	Years as RN
0-2 years	0	1	2	1
2-5 years	2	0	4	2
5-10 years	3	1	3	4
>10 years	7	10	6	8

The majority of this group of nurses had many years of clinical experience, with 83% of the APRNs having more than ten years of nursing experience, and at least two years of experience on the surgical unit. Just over one-half of the RNs (53%) had more than ten years of nursing experience, with 40% having more than years' experience on the surgical unit (Table 1). Of the 27 participants, 22 (81.5%) possessed professional nursing certifications (12/12 APRNs; 10/17

RNs). These certifications included APRN board certification (as PNP or FNP) or certified pediatric nurse (CPNs).

The post-intervention survey was completed by 17 participants including six APRNS (35%) and nine RNs (53%). Two participants did not identify their role in the survey (presented separately) (Table 2).

Table 2

Relevant Clinical Experience for Post-Intervention CSACD Survey Participants

	APRN n=6		RN n=9		Role not Identified n=2	
	Years on Surgical Unit	Years as RN	Years on Surgical Unit	Years as RN	Years on Surgical Unit	Years as RN
0-2 years	1	0	3	2		
2-5 years	0	0	3	3		
5-10 years	2	0	0	0	1	1
>10 years	3	6	3	4	1	1

The post-intervention APRN group had more than ten years of nursing experience, and 83.3% had at least five years of experience on the surgical unit. The RNs had a greater range of experience, both as nurses (67% with 0-5 years and 33% with >10 years) and on the surgical unit (56% 0-5 years and 44% >10 years) (Table 2). All of the APRNs and 40% of the RNs who completed the post-intervention survey held professional certifications. There were no significant demographic differences between the pre and post groups with respect to years of RN or surgical unit experience or certification ($p > .99$).

CSACD Scores

The CSACD scores were analyzed by the different tool categories as described by Baggs (1994). Questions 1-6 are the critical components of collaboration score; question 7 is the global measure of the amount of the collaboration score; and questions 8-9 are the satisfaction score. As each question was based on a 7-point Likert scale, the range for each individual theme varied

based on the total number of questions it included, and this range is included below the theme for each group.

Table 3 below shows the comparison of mean CSACD scores for all participants pre and post intervention.

Table 3

Comparison of Pre and Post Intervention CSACD by Theme

Category (Questions) (Range)	Mean: Pre	Mean: Post	*p* (t-test)
Components of Collaboration (1-6) (Range 6-42)	26.77	34.24	.002
Global Collaboration (7) (Range 1-7)	4.85	4.89	.9
Satisfaction (8-9) (Range 2-14)	9.67	10.78	.1
Total Score (1-9) Range (9-63)	41.12	49.94	.003

The CSACD scores were first calculated and compared for all of the participants regardless of role. The mean components of collaboration scores increased from 26.77 to 34.24, which was statistically significant (p =.002). The mean global collaboration score increased from 4.85 to 4.89, which was not statistically significant (p= .9). The satisfaction scores increased from 9.67 to 10.78, which was not statistically significant (p= .1). The total CSACD score for all questions and all participants increased from 41.12 to 49.94, which was also statistically significant (p = .003).

The CSACD scores were also stratified by role group (RN; APRN), and scores for each of the specific theme categories were also calculated and compared (Table 4).

Table 4

Comparison of Pre and Post Intervention Mean CSACD by Theme and Role

Category (Questions) (Range)	Mean: APRN Pre	Mean: APRN Post	Mean: RN Pre	Mean: RN Post
Components of Collaboration (1-6) Range (6-42)	30.25	33.57	23.79	33.75
Global Collaboration(7) (Range 1-7)	5	5.29	4.73	4.44
Satisfaction (8- 9) (Range 2-14)	10.33	11.29	9.13	9.89
Total Score (1-9) (Range 9-63)	45.58	50.14	37.29	48

The mean APRN group score for components of collaboration increased from 30.25 to 33.57. The global collaboration score increased from 5 to 5.29. The satisfaction score also increased from 10.33 to 11.29. Total scores increased from 45.58 to 50.14. The score for each of the themes increased post-intervention compared to pre-intervention in the APRN group.

For the RN group, the components of collaboration score increased from 23.79 to 33.75. The global collaboration score decreased from 4.73 to 4.44. The satisfaction score increased from 9.13 to 9.89. The total score increased from 37.29 to 48. T-tests were not conducted on the role stratified data due to small sample size.

Transfer Acceptance Bundle Scores

The transfer acceptance bundle was comprised of three components: I-PASS completion (measured by audits); huddles at the time of transfer; and APRN transfer documentation. There

were 53 patients transferred from the NICU or MSICU to the surgical unit during the pilot period. Table 5 below provides the completion number and rates of these three components.

Table 5

Transfer Acceptance Bundle Components

Bundle Component	I-PASS Audits	Transfer Huddles	APRN Documentation
Number	6	40	39
Completion Percentage	11.32%	75.5%	73.6%

The transfer acceptance bundle components results are reported by goal below:

Goal 1: During the implementation period, six transfer audits were completed out of 53 ICU transfers to the infant-toddler unit, a completion rate of 11.32%. Two audits reported that the Synthesis element, which involves asking questions to close the loop, was difficult to achieve. All five elements of the IPASS handoff were completed in 67% of the audits.

Goal 2: The bedside APRN/RN ICU transfer huddle was completed for 40/53 (75.5%) of the ICU transfers.

Goal 3: The APRN transfer acceptance documentation was completed for 39/53 (73.6%) of the patient transfers.

Goal 5: There were no unanticipated ICU readmissions of patients within their first 48 hours of transfer to the surgical unit during the pilot project. The time to transfer was tracked during this pilot project, describing the time between handoff from the ICU provider to the APRN to the time of arrival on the surgical unit. The APRNs receive both email and verbal ICU hand-off and

this data was calculated based on each hand-off method (Table 6). Three of the 53 patient transfer records were excluded from this data; two records due to unknown or ambiguous transfer time; one record due to transfer occurring prior to hand-off.

Table 6

Time to Transfer

	Day Shift	Night Shift	Cross-over	*p*
Mean time from ICU email hand-off to transfer (n=50)	125.5 minutes	78 minutes	345 minutes	<.001
Mean time from ICU verbal hand-off to transfer (n=35)	120 minutes	53 minutes	264 minutes	.002

Fifty email hand-offs were included in the time to transfer results. There were 34 transfers that occurred during the day shift (defined as 0600-1800); the mean time to transfer was 125.5 minutes (range 40-301 minutes). Six transfers occurred during the night shift (defined as 1800-0600); the mean time to transfer was 78 minutes (range 13 to 114 minutes). There were ten transfers (described as crossovers) as the hand-off and the actual transfer occurred across different shifts; the mean time to transfer for crossovers was 345 minutes (range 75 to 805 minutes). When these data were compared by time to transfers, a significant difference with respect to time to transfer was found ($p<0.01$).

Thirty-five verbal hand-offs were included in the time to transfer results. Fifteen additional records were excluded from the time to transfer between arrival to the surgical unit and verbal hand-off due to lack of documentation of verbal hand-off time. There were 22 transfers that occurred during the day shift; the mean time to transfer was 120 minutes (range 30 to 260 minutes). There were six transfers that occurred during the night shift; the mean time to transfer was 53 minutes (range 28 to 84 minutes). There were seven cross-over transfers; the mean time

to transfer was 264 minutes (range 70 to 510 minutes). When these data were compared by time to transfers, a significant difference with respect to time to transfer was found (p=.002).

Discussion

The implementation of the bedside transfer huddle was successful as it surpassed the goal of 50% huddle completion. This practice change huddle brought the APRN and RN simultaneously to the bedside upon transfer to evaluate the patient and discuss the plan of care, developing a shared mental model. This change was well-received by the RN staff as indicated by the collaboration scores. The use of a bedside huddle has been shown to promote empowerment of staff members to raise clinical concerns, which can be addressed in a timely manner (Goldenhar et al., 2013; Melton et al., 2017). There were no ICU readmissions during this three month period. While this finding cannot be associated directly with the changes implemented during this project, this supports consideration of implementing these huddles as a standard of practice on this unit and will guide piloting expansion of this model to other in-patient surgical units. Further research is needed to determine whether the transfer huddles mitigate ICU readmission rates.

Another highlight of this project was the implementation of the APRN ICU transfer acceptance note. The transfer acceptance notes were completed for 73.6% of the transfers, which far surpassed the 30% goal. This was a surprising finding given a few comments this project leader received about the note being “extra work” for the APRN and suggests that APRNs saw value to improve care with this practice. It is a standard practice for other care services in the hospital to document a transfer acceptance note. Documentation by the APRN also serves as a safeguard in cases of malpractice, as it demonstrates that best practice actions were taken in order to protect patient safety (Dolan & Farmer, 2016).

During chart review, anecdotally, it appeared that some providers completed the transfer huddle and transfer acceptance note and others who did not. The Diffusion of Innovation Theory (Kaminski, 2011), which guided this QI project, refers to these team members as laggards or skeptics, and can often be attributed to team members who are resistant to change and suspicious of innovations. These attributes are present in the providers who chose not to participate in project implementation.

The project champions or early adopters of this project worked hard to advocate for the implementation of this practice change, including providing reminders to staff on their shifts who were accepting ICU transfers. One of the project champions accepted a new position in another hospital group during this implementation phase, which may have had an impact on changing the culture as this champion enthusiastically supported this topic of safe patient transfers. Through this implementation period, despite some feedback about the extra work load, individual members of the APRN group evaluated the process change and most of the group adapted to the practice change.

The results of this QI pilot will be shared with the APRN group as well as nursing leadership to evaluate the relative advantage, which is described as the degree to which the innovation is perceived to be superior to the current practice (Kaminski, 2011). The goal of this change model was to help streamline the innovation to meet the needs of each adopter group, in order to ensure buy in from the group. As this APRN group faces many upcoming changes, the data supports that the results of this project and its implications for patient safety will support its' adoption as a permanent process going forward.

The use of the I-PASS hand-off tool by the APRN accepting the patient from the ICU during the transfer acceptance process bundle did not meet the project outcome. Project champions

attempted to complete APRN I-PASS audits, but were limited for several reasons. Implementation of this project occurred during the COVID-19 pandemic, and the site experienced many staffing fluctuations, including retirement/resignations of expert nurses, the use of travel nurses and the hiring of large numbers of new nurses consistent with national experience, capacity concerns and social distancing regulations. It is predicted that over 1.1 million nurses will be needed in 2022 to just replace the number of nurses retiring from the profession (Morris, 2022). In a recent poll, 30% of healthcare workers considered leaving the profession, while 60% reported burn out related to the COVID-19 pandemic (Clement et. al, 2021). Additionally, APRNs were asked to complete self-audits, but this proved to be difficult due to it being a change in individual practice. The goal of 30% of APRN hand-offs to be provided in I-PASS format was not met.

The completed audits indicated that the APRNs identified that the synthesis element was the most difficult element to achieve. This was likely due to the fact that the hand-offs are driven by the ICU team who is transferring the patient out of their care. One audit commented that there was no time for synthesis due to the ICU being busy, while another reiterated that though the receiver attempted to synthesize, this was limited and they felt rushed by the ICU. Closed loop communication allows the receiver to process the message and provide confirmation of the information they received, and the sender verifies that the correct message was received (AHRQ, 2015). The synthesis element of I-PASS allows the receiver to take an active role in hand-off communication and allows validation of the patient and most important issues, without restating the entire handoff (AHRQ, 2015). The literature supports this theory that synthesis is the most difficult element for clinicians to complete when using I-PASS, possibly due to the fact that it is not well-used in healthcare and many clinicians feel that it is awkward and requires workflow

changes (Shahian et. al, 2017). More education on the element of synthesis and its' importance is needed to help support this close loop communication.

This was also complicated by the fact that the ICU uses a different reporting tool, so the APRNs needed to translate what they heard from Formula 1 into the I-PASS format and close the communication loop of communication. While the I-PASS tool has been implemented across the institution and is known to decrease medical errors and adverse events (Starmer et. al, 2014), the ICU has not adopted the use of this hand-off method. The COVID pandemic has changed the culture of hospital patient care areas with staffing changes that have caused experienced nurses to leave the profession, resulting in large numbers of new nurses, including new graduates, traveler nurses and registry nurses, on the surgical unit (Clement et. al, 2021; Morris, 2022).

The Diffusion of Innovation theory, which guided this project, describes the various stages and ways in which team members adapt to the proposed changes (Kaminski, 2011). The implementation period was only three months, and this does not allow much time for the late majority and laggards of the group to understand, accept, apply and support the practice changes. Culture change is always difficult, but especially in a group that has established roles, processes and attitudes (Rick, 2015). The combination of the pandemic and short project implementation time period did not cause favorable conditions for this process change.

While the goal was to have 50% of the RN and APRN staff complete pre and post intervention CSACD surveys, this goal was not achieved**.** Average survey response rates are 20-30% (Qualtrics.com, 2022). In the future, the survey goal would be adapted to align with this average response rate. Qualitative surveys could also be used in the future to gain the valuable opinions from the RN and APRN staff members involved in this process.

When evaluating the data for all RN and APRN survey participants, the post-intervention group had a significantly greater CSACD total score compared to the pre-intervention score (p = .003). Although the satisfaction and overall collaboration scores did not significantly increase amongst the groups, the summation of questions 1-6 which evaluates the critical components of collaboration increased and was significant (p = .002) in the post intervention group compared to the pre intervention group. It is an interesting phenomenon that staff reported significant improvement in the combined components of collaboration but not the global collaboration. This could potentially be explained by the idea that staff considers global collaboration to include other ideals than those explained in the components of collaboration described in this tool.

The comparison of APRN and RN CSACD survey scores revealed differences in their perceptions of collaboration and satisfaction. The RN pre-intervention survey scores were lower than the APRN scores in every theme group. The score differences for collaboration could suggest that RNs do not feel that there is a team decision making process as much as the APRNs do. Additionally, the APRN scores for satisfaction were higher than the RN satisfaction scores. This score relates to feeling satisfied about the decision-making process, as well as feeling satisfied with the decisions made.

The APRNs in this unit are often in a position where they drive the decision-making process for patient care decisions, which could contribute to lower satisfaction scores for RNs. In the post-survey, the RN group had notable improvement in the components of collaboration score, but the global collaboration score was lower. The APRN post-survey demonstrated improvement in all of the theme groups. Future research is needed to help determine what factors RNs and APRNs consider important to improving collaboration and satisfaction, and help identify strategies to implement these methods.

While there is no true way to differentiate whether or not the transfer acceptance bundle that was implemented in this QI project impacted ICU readmissions, the use of a transfer bundle has been found to decrease ICU readmissions (Storey et.al, 2018). Despite having no readmissions during this time period, the review of the literature would suggest that the implementation of a standardized tool to assess patient acuity at the time of transfer may be helpful in evaluating which types of patients are at higher risk for readmission (Kaur et al., 2018; Lee et al., 2015).

The healthcare system has been put under a lot of pressure by the COVID-19 pandemic. As the hospital emerged from this state of emergency, there were increasing capacity demands throughout the hospital, which placed additional stressors on the RNs and APRNs (Morris, 2022). There has been a large volume of staff turn-over in both the APRN and RN groups, and both groups have experienced significant staffing shortages as a result. Travel nurses and registry nurses who are not accustomed to the culture of the particular unit were frequently providing patient care on the surgical unit.

Several factors related to the time-to-transfer results should be further explored following the implementation of this process. 20% of the transfers occurred during the night shift. Interestingly, the time to transfer was overall shorter for these transfers, likely related to the transfer occurring overnight in order to accommodate a new patient in the ICU. However, literature has shown that patients who transfer from the ICU at night are associated with higher rate of unplanned ICU readmissions within 48 hours (Kotsakis et. al, 2016). The “crossovers” in this project were transferred to the unit on a different shift than when hand-off was given, resulting in different providers receiving the patient than those who received direct hand-off from the ICU. While this is sometimes unpreventable, this practice could be mitigated by better

communication between the ICU and surgical unit charge nurses in relation to when the surgical unit bed will be available, which is typically related to discharges or staffing.

Implementing this standardized transfer acceptance bundle for patients transferring from the ICU to the surgical unit improved the RNs' and APRNs' perceptions of collaboration and satisfaction for decision making during this critical transition. The use of a hand-off communication tool in a hospital setting enables a succinct method to transfer pertinent information, but should allow for the receiver to be a participant in this hand-off process. A huddle at the time of transfer promotes more communication between the staff improves patient safety. The implementation of this transfer bundle as the standard of practice would support the hospital's high reliability framework as it demonstrates the use of improvement methods as well as commitment to a safety culture (The Joint Commission, 2021).

Conclusion

This project began as an idea for a practice intervention change to improve the transition of care from the ICU to the surgical unit. By implementing a transfer acceptance bundle, this project sought to improve RN and APRN satisfaction and collaboration during this transfer of care and ultimately reduce the rates of unanticipated ICU readmissions. The data shows that staff who participated in this QI project reported improved collaboration and satisfaction about care related to the transition of care following the implementation of the transfer bundle.

The results of this project will be shared with the staff and leadership team from the surgical unit, as well as with the surgical practice committee, which includes the Director of Surgical Patient Care Services, unit managers from each of the surgical units and nurse educators. The surgical team is preparing for a major change with the opening of a new complex care surgical unit and renovations that will change the demographics of each of the surgical units. This

transitional period is an ideal time to evaluate current practices within the surgical group, particularly the APRN and RNs, and implement this new transfer acceptance on all surgical units.

This QI project focused specifically on how the surgical unit accepts transfer patients from the ICU. Closed loop communication must have buy-in from the sender and the receiver in order to be successful. The ICU currently does not use the I-PASS hand-off format to provide hand-off to the surgical unit APRNs. This project leader suggests engaging the surgical ICU team in this process in order to make the hand-off process succinct across the surgical services. Additionally, other services in the hospital will conduct patient transfer hand-offs face-to-face and often evaluate the patient together at the time of hand-off. While this is more physically feasible for this service as the units are on the same floor and connected, this practice is supported by the Joint Commission (2017) as a suggested action to improve safe patient hand-off.

Future steps can be taken to help support providers who are accepting patient transfers to feel enabled to participate in collaborative hand-off which includes closed loop communication. By standardizing the transfer acceptance process, staff can anticipate the needs of the patient during this transition of care and are able to take ownership in their roles. Improved collaboration between the ICU and the surgical unit could help create a more positive outlook of staff members who participate in these transitions of care. Ultimately, more collaboration between various care providers improves patient safety and this is the ultimate goal of healthcare. Universal implementation of this transfer acceptance bundle across surgical services can improve patient safety.

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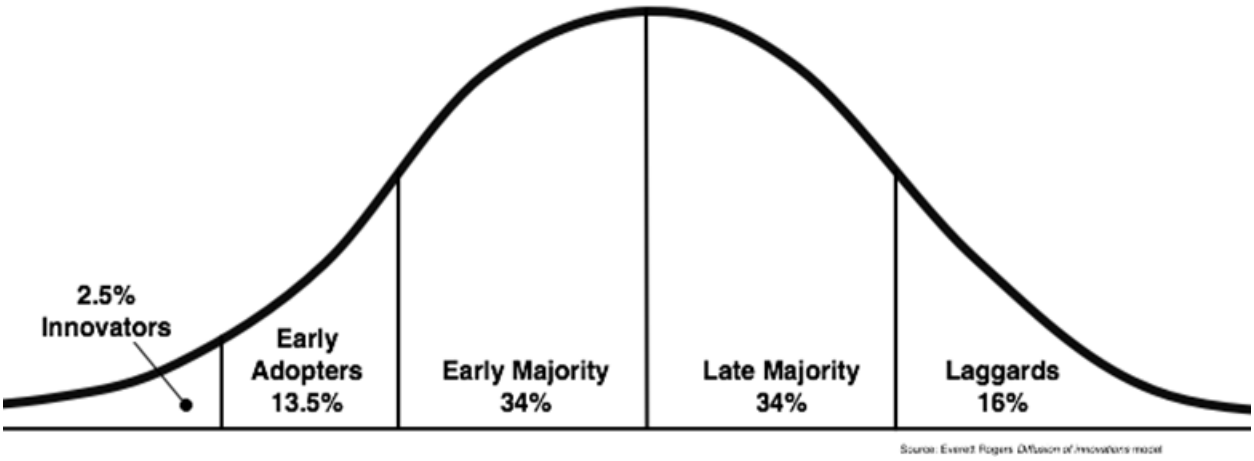
Appendix A: Theoretical Model: Diffusion of Innovation Theory



(Kaminski, 2011)

Appendix B: Transfer Acceptance Process Protocol

ICU Patient Ready for Transfer

ICU Resident/Fellow → Surgical APRN

Report using I-PASS

ICU RN → Surgical Unit RN

Patient transferred to Surgical Unit

Unit secretary pages APRN

APRN + RN Huddle at patient bedside

- **Physical Exam**
- **Review of Plan of Care**
- **Update Orders + Parents**

APRN documents transfer note in Powerchart

Appendix C: I-PASS Template for APRN Hand-off

I	**Illness Severity:** Stable vs. Watcher vs. Unstable * If Unstable – consider further conversation about whether transfer is acceptable
P	**Who is the patient?** Name, age, medical history, relevant surgeries with dates, complications, reasons patient stayed in the ICU Summary of the day (VS, events, changes in plan, tests)
A	**What needs to be done the next shift?** i.e. – follow-up labs; reassess abdomen etc What are we MOST worried about?
S	**Overall Plan:** Highlights the most parts of the patient plan Consider doing this by systems i.e. – cardiac; resp; GI etc For patients who have complicated histories, may consider only include MOST pertinent information instead of overloading receiver i.e. – does an overnight provider need to know about routine discharge planning needs
S	**Synthesis** Receiver of hand-off should summarize plan and ask questions for clarification

Appendix D: APRN Note Template for Documentation in EMR

Transfer Acceptance APRN Note

_____(name of floor APRN) received email sign-out at _____(time) and verbal phone sign-out at _____ (time) from _____ (name of ICU Provider)

_____ (name of floor APRN) reviewed patient chart, orders and VS prior to acceptance

Patient arrived to floor at _____ (time) accompanied by _____ (RN or CA from ICU, family members).

RN paged this APRN at _____ (time) and plan established to meet at bedside at _____ (time)

Physical Exam by APRN:

Admission Vital Signs:

Plan (based on ICU sign-out and assessment):

Orders Reconciled by APRN: _____ (yes/no)

Parents Updated: _____ (yes/no)

Appendix E: Collaboration and Satisfaction about Care Decisions (CSACD)

Please respond to the following questions by circling your response. These questions are related to advanced practice registered nurse - registered nurse collaboration during patient care decision making surrounding ICU transfer to 10 East. Please circle the number that best represents your judgment about the decision. All surveys are confidential.

1. Registered nurses (RNs) and Advanced practice registered nurses (APRNs) plan together to make decisions about care for the patients transferring to this floor.

1 2 3 4 5 6 7
Strongly disagree Strongly agree

2. Open communication among RNs and APRNs about patient care decisions takes place.

1 2 3 4 5 6 7
Strongly disagree Strongly agree

3. Decision-making responsibilities for patients are shared among RNs and APRNs.

1 2 3 4 5 6 7
Strongly disagree Strongly agree

4. RNs and APRNs cooperate in making decisions about patient care following ICU transfer.

1 2 3 4 5 6 7
Strongly disagree Strongly agree

5. In making decisions about patient transfer, all RN and APRN concerns about patients' needs are considered.

1 2 3 4 5 6 7
Strongly disagree Strongly agree

6. Decision-making for patients is coordinated among RNs and APRNs.

1 2 3 4 5 6 7
Strongly disagree Strongly agree

7. How much collaboration among RNs and APRNs occurs when making patient care decisions?

1 2 3 4 5 6 7
No Collaboration Complete Collaboration

8. How satisfied are you with the way decisions are made for patients, that is with the decision-making process, not necessarily with the decision itself?

1 2 3 4 5 6 7
Not Satisfied Very Satisfied

9. How satisfied are you with the decisions made for patients?

1 2 3 4 5 6 7
Not Satisfied Very Satisfied

Adapted, with permission

Additional demographic questions will be included in REDCap survey (Appendix H)

Appendix F: I-PASS Audit Tool

I-PASS Handoff Self-Audit *During the Handoff from ICU report:*

Did I Hear about each element?		**Yes**	**No**
I: Illness Severity	Was the Illness severity / Acuity of Patient(s) communicated?		
P: Patient Summary (includes Todays events)	Was there a patient summary provided?		
A: Action List	Were action items for the next shift communicated, or did the giver specify "No action items?"		
S: Situational Awareness Contingency Planning	Was situational awareness or contingency planning for the patient(s) communicated, or did the giver specify "No anticipated issues"?		
Did I synthesize the patient hand-off?		**Yes**	**No**
S: Synthesis by Receiver	Did the receiver verbalize a synthesis/summarize what was heard?		

Appendix G: ICU Transfer Data Abstraction Tool

1. **Patient Code:**
2. **Date of Transfer:**
3. **Time of ICU-APRN Hand-off (Email)**
4. **Time of ICU-APRN Hand-off (Verbal):**
5. **Was I-PASS format followed?**

   Yes

   No
6. **Time of Transfer:**
7. **Did Huddle Occur?**

   If yes, what time?

   If no, why not?
8. **Was APRN Transfer Note in EMR:**
9. **ICU Readmission within 48 hours:**

   Yes: If Yes, Date/Time _____

   No

Appendix H: Staff Demographics to Accompany CSACD

1. **What is your role?**
   RN
   APRN

2. **How many years have you worked on this surgical unit?**
   0-2 years
   2-5 years
   5-10 years
   >10 years

3. **How long have you been a nurse?**
   0-2 years
   2-5 years
   5-10 years
   >10 years

4. **Do you have a certification?**
   Yes (if yes, list all that apply)
      APRN
      CPN
      Other

   No

Appendix I: Cost Benefit Analysis

Description	Rate	Time	Total Cost
Development of online NetLearning presentation	$63.85/hr x 1 APRN	2 hrs.	$127.70
Meetings with Leadership + Project Champions	$63.85/hr x 4 APRN $42.59/hr x 5 RN $47.77/hr x 1 RN Manager	8 hours total	$4128.96
Education & Training for RNs including pre/post survey	$42.59/hr x 50 RNs	50 mins	$1774.58
Education &Training for APRNs including pre/post survey	$63.85/hr x 18 APRNs	50 mins	$957.75
Weekly Data Collection By project lead	$63.85/hr	2 hr/week x 12 weeks	$1532.40
Meetings w/ clinical analyst from IT for Implementation of APRN Transfer Note in EMR	$44.14/hr x 1 IT tech	5 hours	$220.70
		Total Costs	**No costs will be incurred.**

Appendix J: Timeline for Implementation of Quality Improvement Project

Task	July 2021	August 2021	September 2021	October 2021	November 2021	December 2021	January 2022	February 2022	March 2022	April 2022
Protocol development	X									
NSR and IRB approval		X								
Pre-intervention CSACD administered to floor RNs & NPs			X							
Intervention with PDSA cycles every 2 weeks				X	X	X				
Post intervention CSACD administered to floor RNs & NPs							X			
Data analysis								X	X	
Dissemination BCH & UMass										X