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Standardizing Patient Handoffs in the ICU – Implementing the "I PUT PATIENTS FIRST" Tool.

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Abstract

Background. Ineffective patient handoff can result in poor nurse communication, increasing the likelihood of adverse events including medication and documentation errors.

Context/Problem. In one 20-bed ICU unit in a northern California community hospital, 48 patient handoffs were observed over 2 weeks. Only 29% occurred at the patient's bedside; 39.5% used a standardized handoff tool; and 54% included the patient and/or family. These findings indicate significant quality gaps in the unit's ICU patient handoff processes.

Intervention. The educational intervention consisted of one introductory and two follow-up teaching sessions related to best practices for handoff processes followed by implementation of the I PUT PATIENTS FIRST handoff tool.

Measures. Metrics include a Likert-scale survey to assess nurse perceptions of the handoff process and post-implementation observation of 96 handoffs to evaluate the intervention's impact on 3 handoff domains: location (bedside), patient/family involvement, and use of the I PUT PATIENTS FIRST tool.

Results. Due to current hospital Covid-19 pandemic restrictions, the intervention is on hold until conditions allow change projects to resume. However, the project team anticipates ≥ 25% improvement in each handoff domain and ≥ 50% improvement in nurse perception.

Conclusions. Definitive conclusions cannot be drawn until after the project has been fully implemented and evaluated after the Covid-19 pandemic. However, the project team expects that implementing evidence-based handoff practices will result in measurable engagement and improvement in nurse knowledge exchange processes in the ICU.

Keywords: handoff, nurse knowledge exchange, communication, standardized tool, quality, ICU.

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Introduction

Nurse knowledge exchange (NKE) is a key term used for patient handoff in an integrated delivery system in Northern California. NKE is the process of communicating relevant patient information from off-going to on-coming nurses, including specific patient needs, therapeutic interventions, and changes to care. Hand-off errors, which occur when a patient is not transferred or is transferred ineffectively, account for a large percentage of adverse events nationally. The Joint Commission (TJC, 2016) notes that one 2016 study "estimated that communication failures in U.S. hospitals and medical practices were responsible at least in part for 30 percent of all malpractice claims, resulting in 1,744 deaths and $1.7 billion in malpractice costs over five years" (p. 2). Lee, Phan, et al. (2016) report that handoff errors may be implicated in almost 80% of serious events which occurred over the 10 year period starting in 2004 (p. 1). Clearly, effective NKE is a vital factor in providing quality in-patient care. Improving the NKE process impacts patients positively by reducing their risk of suffering from an adverse event and maximizing the effectiveness of the care they receive during in-patient hospitalizations.

Improving the NKE process also has a beneficial impact on healthcare systems. For example, within a specific microsystem, an effective patient handoff ensures that nurses have the information needed to care for their patients, which supports system level quality, safety, and efficiency. At a large community hospital in northern California, hereafter referred to as Community Hospital of Northern California (CHNC), one of the organization's priorities is to provide affordable health care that is high quality and improves the lives of the community served by the hospital. Improving NKE aligns with this organizational priority by improving the

quality of healthcare that a department or facility is able to provide to the individuals, health plan members, and community.

The quality improvement (QI) project described in this paper was designed to standardize the process of nurse knowledge exchange in the CHNC Intensive Care Unit (ICU) at the point of patient transfer and to implement use of the "I PUT PATIENTS FIRST" handoff tool, which is specific to ICU care. This mnemonic was first invented by clinicians at University of Texas (Moon et al., 2015) and is currently recommended by The Joint Commission (2017). See Appendix A for a description of the handoff tool.

Special Note Regarding Circumstances of QI Project Implementation

The QI project was developed by the author during the winter of 2020, and the initial stages of the project have been completed (e.g. conducting a microsystem assessment and literature review and gathering baseline data about current handoff processes in the CHNC ICU). However, due to the Covid-19 pandemic that began in early spring 2020, project implementation has been put on hold, and the later stages of the project (e.g. holding the nurse training session, administering pre- and post-intervention surveys, collecting post-intervention handoff data, etc.) have not yet been implemented. These stages of the project will be implemented once hospital conditions allow change projects to resume.

Problem Description

Despite attempts to implement effective NKE processes, many facilities still experience barriers to an effective handoff process. This ongoing challenge has been present since 2006, when The Joint Commission (TJC) published a Patient Safety Goal on handoffs (Lin et al., 2015), and the magnitude of the problem was again reinforced in 2017 when TJC generated a Sentinel Event Alert to address barriers to effective NKE (TJC, 2017). Clearly, patient handoff

continues to be a relevant issue in the in-patient healthcare setting. Furthermore, studies by Lee, Mast, et al. (2016) show that most nursing students are not taught how to perform systematic handoffs, indicating a crucial practice gap.

This problem is currently visible in the CHNC ICU microsystem, and a QI project was initiated by this author to address the observed quality gap. Although the CHNC Quality Department was unwilling to release internal data relating to errors due to handoff processes, the author, a Nursing Supervisor at CHNC and CNL graduate student, dedicated time to observe and document handoff procedures in the ICU during shift change times and noted that nursing handoff was frequently unstructured and informal. Of the 48 ICU handoffs observed over 2 weeks, (n=48), 34 did not conduct handoff at the bedside, 29 did not use a standardized handoff tool or used it only partially, and 22 did not include patients and/or families in the handoff process (see Appendix F – Nurse Supervisor Log).

Setting

The setting for this practice change improvement project is the CHNC ICU, a 20-bed unit which provides specialized care, including intensive monitoring and acute care. The current state of handoff communication in this setting and processes around NKE reflect a timely and important opportunity for improvement. The handoff process is supposed to occur at the patient's bedside at shift change or break times and is designed to provide the incoming nurse with reliable, high-quality information and to include patient/family participation and his/her "voice." However, in this microsystem, the crucial communication handoff process is too often either ignored and does not happen; or, it occurs ineffectively, and results in inadequate information for incoming nurses who are subsequently at risk without the data and complete status report needed to safely care for their patients.

Microsystem Assessment - Current Knowledge About the Problem

One of the domains that reflects variation and inconsistent practice in this setting (the CHNC ICU) is the patterns of communication. Individuals often use break time to gossip, and they infrequently consult with each other about patient care. Another significant pattern observed in the baseline assessment revealed that nurses tend to ignore authority on all shifts. The ICU was without a manager for slightly over 3 years (prior to November 2019), and the unit norms developed some inconsistent and unhealthy behaviors and patterns wherein individuals simply chose to adhere to the processes they preferred and ignored those they disliked. Although a manager is now in place (since November 2019), there is still no established pattern of seeking leadership input or complying with new or existing quality directives. This impacts NKE since nurses are not consistently adhering to organizational directives about the observed or expected handoff processes, and incoming nurses do not know what care their patients have received or any changes in care management that have been implemented during the previous shift. These realities can lead to poor patient outcomes such as medical errors and have stimulated a sense of urgency by the clinical nurse leader (this author) to address team culture, nurse to nurse communication, and patient safety.

Metrics and Data

The CHNC Quality Department declined to release internal data regarding adverse events related to handoffs, so the author was unable to obtain definitive baseline data about current performance in the CHNC ICU. However, use of a standard handoff tool and a clear structured process for defining expectations for handoffs have been identified as *metrics that matter* in the CHNC ICU. Multiple studies provide convincing data about the best practices supporting standardized NKE (Lee, Mast, et al., 2016; Lin et al., 2015; Usher et al., 2018; Zou & Zhang,

2016). Zou and Zhang (2016) report that applying a standardized nursing handoff procedure results in “a significant reduction in total nursing errors and handoffs-related nursing errors” (p. 65). Moreover, communication around errors improves when handoff procedures are standardized (Lee, Phan, et al., 2016), and hand-off training can reduce the adverse events associated with ineffective patient handoff (Caruso et al., 2015; Lee, Mast, et al., 2016). For example, adverse events described in the literature include inappropriate care of lines, documentation errors, medication errors (wrong dose or wrong drug), and delayed or omitted administration of tests and/or medications (Zou & Zhang, 2016). A study by Lin et al. (2015) found that one facility’s Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) score for “nurse communication” was increased 3.3% after implementing standardized NKE processes. Clearly, the significance of several studies (including both qualitative data about nurse perceptions and quantitative data about the rates of adverse events) as well as the quantitative data from HCAHPS support a compelling opportunity for improvement.

Available Knowledge

PICOT question

The evidence search that guided this project was based on the development of a PICOT question which asked about the relationship between the problem/population (P), intervention (I), comparison/control (C), outcome (O), and time (T). The guiding PICOT question was: For CHNC ICU nurses (P), how does use of the I PUT PATIENTS FIRST handoff tool (I) compared to current NKE practices (C) impact their handoff procedures and knowledge about the patient (O) during patient handoff times over a 6-week period after handoff training (T)?

Literature Search

An electronic literature search was conducted using the following databases: CINAHL, MedLine, and Ovid (which includes the Joanna Briggs Institute EBP Database and the Ovid Nursing Database). Search terms included various combinations of the following: “nursing handoff,” “nurse knowledge exchange,” “standardized handoff,” and “handoff barriers.” Search limits were set to include only peer-reviewed, English language, full-text articles published within the last five years (between 2015 and 2020). Individual searches generated between two and 21 articles each. Of these, eight met relevant search criteria and five were chosen for inclusion in an evaluation table (see Appendix C). The Johns Hopkins (2017) Nursing Evidence-Based Practice evidence evaluation tool was used to categorize the level and quality of each article selected. Level I (LI) studies include experimental studies, randomized controlled trial (RCT) studies, systematic reviews of RCTs, and some mixed method design studies. Level II studies include quasi-experimental, some mixed method designs, and systematic reviews of quasi-experimental studies. Level III includes nonexperimental studies, qualitative studies, and systematic reviews which includes a nonexperimental study, and exploratory or convergent studies. Studies are also assessed on quality and given a rating of A, B, or C (high quality, good quality, or low quality, respectively).

Literature Synthesis

Handoff errors pose a serious threat to patient safety and effective care delivery, and such errors account for a significant portion of adverse events, with some estimates indicating that handoff errors may be a significant factor in as much as 80% of sentinel events (Lee, Phan, et al., 2016).

There are four major barriers to effective patient handoff and nurse knowledge exchange. These barriers include 1) lack of nursing education in teaching students how to perform

systematic patient handoffs (Lee, Mast, et al., 2016); 2) nurse perceptions about the length of time required; 3) lack of standardization in the handoff process resulting in different processes from one nurse to another (Usher et al., 2018); and 4) interruptions during handoff (Rhudy, 2019; Usher et al., 2018).

Studies have indicated that standardizing the patient handoff process reduces error rates (Lee, Phan, et al., 2016; Zou & Zhang, 2016) and increases information/knowledge transfer between outgoing and incoming nurses (Caruso et al., 2015). Standardized handoff processes do not increase handoff time and have even been shown to significantly reduce times (Caruso et al., 2015; Usher et al., 2018).

Additionally, nurse and patient perceptions of handoff effectiveness are improved by standardization and explicit training on handoff processes. Students who receive training in such communication handoff procedures demonstrate increased recognition of required components of an effective handoff (Lee, Mast, et al., 2016). Nurses who underwent handoff training have reported statistically significant improvements in their perceptions of report communication, with one study showing the mean score improving by 0.71 ($p < .05$) between nurses' pre- and post-implementation perceptions (Usher et al., 2018, p. 160). Finally, some facilities which have implemented standardized handoff processes have reported a significant increase in the patient perceptions of nurse communication as indicated by improvements in the HCAHPS scores from 73.8% pre-intervention to 77.4% post-intervention ($p < .05$) (Lin et al., 2015).

Rationale

An appropriate change theory can help structure and guide implementation of a quality improvement project. Kurt Lewin's Theory of Change was selected as an appropriate theoretical framework in this particular case because, according to Bakari et al., (2017), this conceptual

framework focuses on managing employee perceptions during organizational change management initiatives. This was especially important because the primary anticipated barrier to successful implementation was the potential for staff resistance since the staff had developed the habit of ignoring directives around handoff.

Lewin's Change Theory is based on the idea that change occurs in 3 steps: unfreezing, change, and refreezing (Petiprin, 2016). Unfreezing entails getting the organization or system ready for change. In this case, the QI project was designed so that the ICU would be prepared for the change by educating staff about the current lack in NKE processes, providing evidence about the importance of standardized NKE, and informing staff that they can earn continuing education credits (CEUs) by completing the training. The change stage is when the change is actually implemented, and behaviors, thoughts, or attitudes (or sometimes all three) are transformed in order to help solve a problem or issue (Petiprin, 2016). This stage of the project was designed to focus on changing the actions of the ICU nursing staff and nurse manager by teaching them how to use the new handoff tool and how to adhere to a standardized process, including conducting handoff at the patient's bedside and including the patient/family in the handoff process. The final stage of change is refreezing, in which the new actions or behaviors become part of the established processes and culture of the system (Petiprin, 2016). In this stage of the project, the QI project calls for the Nurse Manager and Assistant Nurse Managers to monitor nursing staff adherence to the new NKE processes. This monitoring is designed to occur over the 6-week period after the initial training has occurred (see Appendix E for project timeline). This discussion reflects the way the QI project was designed to be implemented; the actual implementation of the project is currently on hold due to the Covid-19 pandemic.

Lewin's Change Theory also focuses on the system forces which help change (driving forces) or hinder change (restraining forces). According to Petiprin (2016), the driving forces are those forces which drive and support the change. Bakari et al. (2017) discuss how problems reflecting the status quo can actually be one of the driving forces, and at the CHNC ICU, that was certainly (and continues to be) the case. The current state or status quo represents insufficient NKE, and nurses often complain about not having the information they need from previous shifts to care for their patients adequately. This lack of information is one of the primary forces which is driving the proposed change initiative. The Clinical Nurse Leader (CNL) is also a driving force, actively supporting the change and educating others about the need for change and how to implement the proposed intervention. Restraining forces prevent or slow change (Petiprin, 2016). In this microsystem, the primary restraining force reflects a staff belief that change is not necessary and the current culture of disregard for the process of NKE including some of the directives issued by the recently hired Nurse Manager.

The ICU microsystem at CHNC is ready for a change. The status quo is a problem, and nurses are aware that not having the knowledge they need about care delivered on the previous shift is hindering their ability to deliver effective patient care during their own shift. Also, there is now a Nurse Manager in place after a long period of absence, and the presence of a Nurse Manager is a key part of the success of the change initiative, especially since some studies have found that "visible leadership during shift change" can have a positive impact on nurse behavior and knowledge exchange (Usher et al., 2018, p. 161). Even though there may be some staff resistance at first, there is a clear need for change which will hopefully drive staff acceptance and adherence to a new handoff process.

Specific Project Aim

The goal is to standardize handoff practice in the CHNC ICU by July 15, 2020 (or when the current pandemic constraints are lifted and implementation of change projects can be resumed) by offering a 2.5-hour training session with two 30-minute follow-up sessions that will teach and reinforce effective use of the I PUT PATIENTS FIRST HANDOFF tool, as measured by observation (to assess presence of standardized handoff elements) and by pre- and post-training surveys (to assess nurse perceptions of the handoff process). The pre-training survey (see Appendix B) will assess and measure current handoff procedures and knowledge. The post-training survey (see Appendix B) will assess and measure handoff procedures post-training in order to identify to what extent use of the tool has impacted the process of NKE. Moreover, the author (in conjunction with the Nurse Manager and Assistant Nurse Managers) will again audit handoffs through observation to identify whether there has been a change in the percentage of handoffs which occur at the bedside, use the standardized tool, and include family/patient. The 6 weeks immediately following the training session will be used to troubleshoot any issues that arise with use of the tool; during this time, the CNL, NM, and ANMs will coach and mentor staff nurses (as needed) in the handoff process, and there will be two scheduled follow-up sessions (at 3 and 6 weeks post-implementation). The data from the nurse surveys (administered at initial training and 6 weeks post-training) will be collected and the information organized to show trends and patterns (see Appendix H, which shows the table for analyzing the survey data). The author, Nurse Manager, and Assistant Nurse Managers will then observe a total of 96 handoffs over 2 weeks after the final 6-week check-in session. Data collected during this 2-week period will be calculated as both a raw number (# of handoffs which occur at the patient bedside, # of handoffs which involve the patient/family, and # of handoffs which use the I PUT PATIENTS FIRST tool) and as a percentage for each domain (raw # / 96). See Appendix F for the data table,

which currently includes data from the Nurse Supervisor observation log used in the baseline observations which validated the quality gap. However, because post-implementation observations have not yet been conducted, the table has spaces for post-implementation data, but the data is not yet present.

Description of Intervention

After considering the literature review and recommendations for educational interventions, a didactic session with correlative simulation and role play teaching / learning activity was chosen as the primary intervention.

The intervention (not yet implemented) is designed to be a 2.5 hour experiential training that starts with an ice breaker followed by an introductory PowerPoint presentation, explanation of the evidence base and description of the handoff tool, and time for simulations and role play in which learners practice using the handoff tool in small groups of three. Pre-developed scripts that integrate various ICU scenarios will be used, and de-brief time will be scheduled. During each simulation, learners will work in groups of 3, with 2 learners performing the handoff using the given scenario (1 learner acting as incoming nurse and 1 learner acting as outgoing nurse). The third learner will observe, take notes, and offer feedback. Learners will switch roles, and groups will be re-mixed to allow learners to practice with a variety of handoff partners and different scenarios. There will also be 2 follow-up sessions at 3 weeks and 6 weeks post-training. See Appendix D for an outline of the teaching plan to be used once hospital conditions allow the QI project to resume.

Aim Statement

The global aim is to improve nurse knowledge exchange processes in the CHNC ICU to improve quality and safety of patient care. The specific aim of this project is to increase the

percentage of “Strongly agree” and “agree” responses on the post-training survey question about how often all pertinent information is communicated during handoff by 50% from pre-training levels by project completion when the 6-week post-training evaluation survey is administered.

Methods

This project was undertaken as an evidence-based change of practice project at Community Hospital of Northern California, and as such was not formally supervised by the Institutional Review Board (see Appendix G).

Context

This section of the paper will discuss the relevant context around the QI project and outline the methods used and steps taken during implementation of the project, including those steps which are planned but have not yet been implemented due to facility restrictions around the Covid-19 pandemic.

Microsystem Assessment

Conducting a 5P microsystem assessment (Dartmouth Institute for Health Policy and Clinical Practice, n.d.) laid the groundwork for understanding relevant patterns and processes in the CHNC ICU, including the strengths and weaknesses of the historical processes occurring in the unit. This assessment revealed the three patterns noted above (ineffective communication patterns among nursing staff, nursing staff tendency to ignore authority, and inconsistent implementation of handoff process), which reflect the quality gap and rationale for this quality improvement (QI) change project. The microsystem analysis provided a clear needs assessment: communication patterns in the ICU (especially patterns around patient handoff) reflect a gap in the provision of quality care and thus need to be addressed.

Conceptual Framework Selection

Once ineffective/inconsistent handoff was identified as a significant challenge in this microsystem, Kurt Lewin's Change Theory was selected as the theoretical framework for the QI project. Staff resistance was the primary anticipated barrier to successful culture and behavioral change; Lewin's theory provides a realistic and proven framework for managing employee perceptions during organizational change management initiatives (Bakari et al., 2017).

Conducting a Literature Review

To identify best practices and evidence-based practices (EBP) around NKE, a literature review was conducted using the CINAHL, MedLine, and Ovid databases. Search terms included "nursing handoff," "nurse knowledge exchange" "standardized handoff," and "handoff barriers." The purpose of the literature review was to identify best evidence-based practices around NKE that would be used to guide the QI intervention project. The best practices identified included patient/family involvement, handoff being conducted at patient bedside, and handoff occurring with a standardized handoff tool. The PICOT question used to guide the literature search was: For CHNC ICU nurses (P), how does use of the I PUT PATIENTS FIRST handoff tool (I) compared to current NKE practices (C) impact their handoff procedures and knowledge about the patient (O) during patient handoff times over a 6-week period after handoff training (T)?

Conducting Nurse Observations to Establish Baseline Handoff Data

The next step was conducting observations to establish baseline data regarding NKE processes in the ICU. In order to identify the scope of the problem, the author conducted a spot-check observational audit of handoff processes, observing a total of 48 handoffs over a 2-week period, thus creating a baseline for measuring the success of the QI intervention (see Appendix F – Nurse Supervisor data log). The author scored each handoff observed, noting whether it met EBP criteria for occurring at bedside, family/patient involvement, and use of a standardized

handoff tool. See Appendix F for the baseline data gathered. Conducting these observations allowed the author to understand exactly which components of a strong handoff were/were not occurring in the ICU and to what extent.

Formation of QI Team

The author held initial meetings with the Nurse Manager (NM) and Assistant Nurse Managers (ANMs). During these meetings, the author presented evidence in support of implementing a QI project around NKE processes in the ICU, introduced the I PUT PATIENTS FIRST HANDOFF tool, and invited them to be part of the QI team. It was decided that the NM and ANMs would serve as consultants and co-coaches during the 6-week post implementation period, while the author would be responsible for developing the training plan and leading the teaching session. The NM and ANMs will also help conduct the post-implementation handoff observations in the 2-week period after the 6-week follow-up session. Finally, it was decided that all team members would help introduce the QI initiative to ICU nursing staff during daily huddle times.

Development of Training Plan with Simulation Scenarios

A training plan was then developed using the TeamSTEPPS framework, which has been identified by the Agency for Healthcare Research and Quality (AHRQ) as an "evidence-based framework that can optimize team performance across the healthcare delivery system" (AHRQ, n.d., p. 4). Inspired by this framework, a teaching plan was created for introducing the I PUT PATIENTS FIRST handoff tool to ICU nursing staff (see Appendix D). Additionally, a Gantt Chart plan of action was developed to guide the QI project (see Appendix E).

Huddle Time Introduction

Once the teaching plan was created, the author, NM, and ANMs introduced the new handoff tool during daily huddle times. The team had planned to conduct the initial training in late March 2020. However, due to the Covid-19 pandemic, implementation was interrupted and the QI project has been put on hold until hospital conditions again allow for implementation. The following section will discuss the intervention as it was designed; however, implementation of the intervention will not occur until hospital conditions again allow.

Intervention

The primary members of the QI project team included the author, the Nurse Managers (NMs), and the Assistant Nurse Managers (ANMs) in the ICU. It was decided that these team members were responsible for introducing the QI initiative to ICU nursing staff during daily huddle times. The author has developed the teaching plan (including case scenarios to be used for nurse practice) and the project timeline (Appendices D and E, respectively) and will be responsible for conducting the initial teaching session and the two follow-up sessions once hospital conditions allow the QI project to resume.

The initial teaching session (see Appendix D)will include a power-point presentation on the handoff tool, and each nurse will receive a mini card with the handoff tool in a plastic pocket for them to attach to their ID badge to use during handoffs (Appendix A). The NMs and ANMs will monitor handoff processes on the floor during the 6-week post-implementation period; they will use a checklist for each handoff observed, noting whether it occurs at the patient bedside, uses the I PUT PATIENTS FIRST tool, and whether it involves the patient/family. A handoff will be marked as “occurring at patient bedside” only if the entire handoff process occurs there. It will be marked as using the I PUT PATIENTS FIRST tool only if the entire tool is used; handoffs which use only a portion of the tool will be marked as not using the standardized tool.

A handoff will be scored as involving the patient/family if there is ≥ 1 verbal interaction between the incoming or outgoing nurse and the patient or his/her family related to the patient's care.

This QI intervention will mark a two-fold change from the previous NKE process occurring in the ICU: 1) The intervention will require nursing staff to begin conducting every handoff in a systematic, standardize way at the patient bedside and will stipulate involvement of the patient/family; 2) the intervention will require the unit-wide use of a standardized handoff tool to structure the knowledge exchange process. The identified evidence-based tool to be used is the I PUT PATIENTS FIRST ICU handoff tool currently approved by TJC (2017).

Studying the Intervention

After implementation, two aspects of the QI intervention will be assessed: 1) its impact on nurse perceptions of the knowledge exchange process, and 2) its impact on the handoff process itself. The first of these measures will be evaluated using pre- and post-intervention surveys (Appendix B) that will yield both quantitative and qualitative data (see Appendix H). The second measure will be assessed by comparing the baseline data from the pre-intervention observation period to data gathered during a 2-week observation/audit period post-implementation. The post-implementation period will include checks at 3 and 6 weeks post-intervention to troubleshoot, answer questions, and debrief with nurses. Then, after the final 6-week post-implementation check, there will be a 2-week observation period during which the CNL, NM, and ANMs will observe a total of 96 handoffs, scoring each to determine whether the QI intervention impacted the percentage of handoffs conducted at the patient bedside, the percentage of handoffs using a standardized tool, and the percentage of handoffs which involve patients/families (see Appendix F).

Measures

Nurse perceptions of the NKE process will be measured using pre- and post-intervention nurse surveys (Appendix B). These surveys were created with a combination of Likert scale responses and open-ended response questions. Likert scale questions are those which ask respondents to choose one response from several on a 5-point (or 7- or 9-point, etc.) scale, and if carefully worded, they can yield clear, relevant, ordinal data about a carefully focused topic or question (Cooper & Johnson, 2016). Well-constructed Likert scale questions are generally considered to have strong validity when respondents understand the questions and the creator interprets the responses appropriately within the applicable context (Joshi et al., 2016). In this case, the Likert scale questions in the surveys will ask nurses to evaluate on a 5-point scale how often (in their opinion) pertinent patient information is omitted during NKE. The rationale for choosing this method to assess nurse perceptions is that such surveys are quick and easy to complete and can yield clear, quantifiable data to allow the QI team to assess how nurses perceive the NKE process before the intervention and how they perceive the impact of the intervention on handoff processes. Additionally, the open-ended response questions will be included as a way of yielding qualitative data about participants' perceptions/beliefs about both their pre-intervention handoff processes and how (if at all) the intervention impacted their handoff process. Finally, the post-intervention survey will also include one question on the training itself in order to allow the QI team to assess nurse perceptions about how effectively the training prepared them to use the I PUT PATIENTS FIRST tool (see Appendix H for table to analyze survey data).

The method chosen to assess the intervention's impact on the handoff process is a nonexperimental, observational study method. Pre-intervention, handoffs (n=48) were observed

over a 2-week period in order to establish baseline data and patterns (see Appendix F). All pre-intervention handoff observations were conducted by the author, who used a simple checklist to observe the three handoff domains being assessed: 1) did the entire handoff occur at bedside? 2) did the handoff involve the patient/family at least once? and 3) did the handoff use a standardized tool in its entirety? When the QI project is able to resume (after the Covid-19 pandemic), the initial training session will be conducted and the CNL, NM, and ANMs will continue to be present and available to help coach nurses on handoff processes during the 6 weeks post-training. At the 6-week post-training follow-up session, the post-implementation survey will be administered. Then, the CNL, NM, and ANMs will observe handoffs over a 2-week period, scoring each handoff for the presence/lack of the three necessary elements: patient/family involvement, bedside location, and use of I PUT PATIENTS FIRST handoff tool. During this time, each handoff will be observed by one rater (the author/CNL, NM, or ANM). Because handoffs will be observed by only one rater, inter-rater reliability will not be assessed. Having >1 rater observe each handoff is not practically feasible, and the QI team has decided that the observation checklist is sufficiently simple to make multiple raters for each observation unnecessary. One of the strengths of an observational study method is that observation "provides a chance to learn things that people may be unwilling to discuss in an interview" (Bryant, n.d.), and the QI team has selected this method as the best method for assessing the success of the intervention.

Ethical Considerations

This project met the criteria for being considered an Evidence-based Change of Practice Project rather than a Research Project (see Appendix G). The University of San Francisco School of Nursing and Health Professions faculty approved this project as an Evidence-based Change of

Practice Project. As such, Institutional Review Board (IRB) review was not necessary. The author declares that there is no conflict of interest.

One ethical consideration that arose during this project included initial concern over whether the pre-intervention handoff observations—which were conducted without the ICU nurses' knowledge—violated the ethical obligation to obtain informed consent from improvement project participants. However, in reviewing the situation and context, the QI team determined that this action did not violate ethical principles because 1) this project is an Evidence-Based Change of Practice Project rather than a Research Project, and 2) since the author is a Nursing Supervisor at the hospital where the observations were conducted, the act of observing nurses to monitor for adherence to or inconsistency with any organizational patient safety goal and effective nurse to nurse communication reflects standard practice within the scope of nursing supervisor duties and therefore is something that the staff nurses and other interdisciplinary team members should reasonably expect to occur. Hourly rounding, team huddle format and frequency are other examples of opportunities for nursing observation of variation in the microsystem.

A second ethical concern is illustrated in the tension between the CNL roles of patient advocate and risk anticipator/systems analyst. A patient advocate helps the patient make his/her voice heard, whereas a systems analyst tries to design systems and processes that minimize risk to the patient and organization. When a process designed to minimize risk conflicts with a patient's desire to receive/decline a particular treatment, nurses can face an ethical dilemma. Discussing nursing ethical considerations, Haddad and Geiger (2020) note that the "nurse's primary commitment is to the patient" (para. 6) but that the nurse also "has authority, accountability, and responsibility for nursing practice [and]...takes action consistent with the

obligation to provide optimal patient care" (para. 9). Balancing these two demands of the nurse's role can be challenging, and implementation of the standardized I PUT PATIENTS FIRST handoff tool could potentially bring up issues of patient autonomy vs. nurse obligation to provide optimal care. For example, the handoff tool requires outgoing nurses to assess and communicate the likelihood of extubation. The outgoing nurse might describe extubation as "highly unlikely" (meaning that it is the nurse's/physician's assessment that the tube is medically necessary). However, the incoming nurse, on communicating with the patient, may discover that the patient no longer wants the tube even though it is still medically optimal. The nurse can then be faced with a dilemma: adhering to ICU handoff procedures requires him/her to deliver an assessment of extubation removal likelihood at the next handoff. Should he/she communicate that the tube is to be removed (per the patient's wishes) *or* that the likelihood of extubation is still "highly unlikely"? Haddad and Geiger (2020) state that nurses "must find a balance" as they deliver patient care (para. 22), especially since "a patient's need for autonomy may conflict with care guidelines" and a nurse must respect a patient's choice "not to receive a treatment that could potentially provide a benefit" (para. 23). Nurses must continually assess the line of differentiation between their role as patient advocate and their role as deliverer of optimal care. This is one of the ethical concerns raised by implementing use of a standardized handoff tool that requires nurses to communicate their medical assessment while also considering patient wishes and autonomy.

Expected Results

The two measures chosen to evaluate the success/impact of this change project were 1) handoff observations using a checklist to determine the intervention's impact on the handoff processes in the CHNC ICU and 2) surveys to measure nurse perceptions of the intervention's

effectiveness. However, because the change project was interrupted by the Covid-19 pandemic in the Spring of 2020, implementation of the final stages of the project has been postponed until hospital conditions allow QI projects to resume. Therefore, this section of the paper will discuss both the data that has already been gathered and the data/results which the QI team *expects* to obtain after the rest of the project is implemented.

Anticipated Impact on Handoff Processes

The QI team was able to establish baseline data for evaluating handoff processes in the ICU (see Appendix F). By observing 48 handoffs over a 2-week period, it was determined that fewer than half of all current handoffs (29%) occur at the patient's bedside; fewer than half (39.5%) use any kind of standardized handoff tool to structure the NKE process; and only slightly more than half (54%) include the patient and/or family in the handoff process. This data all indicates concerning quality gaps in the handoff processes occurring in the CHNC ICU. The goal of this project is to improve nurse knowledge exchange processes in the ICU by standardizing the handoff process in the ICU so that every handoff includes the patient/family, is conducted at the bedside, and uses the I PUT PATIENTS FIRST handoff tool.

The QI team expects to see positive impacts in all three of these domains by 6 weeks post-training. Although it is impossible to determine exactly what the range of improvement in each domain will be, the QI team anticipates ≥ 25% improvement in each domain. Specifically, the QI team anticipates that after the training and 6-week post-implementation period (during which the QI team will continue to coach and mentor staff nurses as needed), ≥ 54% of handoffs will occur entirely at the patient's bedside, ≥ 64.5% will use the I PUT PATIENTS FIRST tool *in its entirety* to structure the handoff process, and ≥ 79% of handoffs will involve the patient/family.

Anticipated Impact on Nurse Perceptions

The pre- and post-implementation surveys for measuring nurse perceptions of the handoff process were scheduled to be administered at the initial training session in Week 5 (pre-intervention surveys) and at the 6-week follow-up session during Week 11 (see Appendix E for a Gantt chart with the projected timeline for project implementation). However, the pandemic restricted project implementation before the QI team could administer either set of surveys.

As with the data for the observations, it is impossible to predict exactly what data the survey results would have yielded. However, because the baseline data indicates that fewer than half of handoffs currently occur at bedside or use a standardized handoff tool, while only slightly more than half involve the patient, the QI team anticipates that a corresponding majority of nurse survey responses will indicate "disagreement" or "strong disagreement" with the statement "When a patient is handed off to you, all relevant information is communicated" on the pre-intervention survey (See Appendix B for pre- and post-training survey questions). Specifically, the QI team believes that the mean score for this question will likely be somewhere in the range between 2 and 3, indicating an average nurse perception that current handoff processes frequently fail to communicate some piece of relevant information. The goal for the project is to increase this mean score by $\geq 50\%$. For example, if the mean score pre-intervention is 2.3, the QI team anticipates that the mean score post-intervention will be ≥ 3.45 ($2.3 + (50\% \times 2.3) = 2.3 + 1.15 = 3.45$).

Discussion

Summary

The purpose of this change project was to use evidence-based practices to standardize patient handoff processes in the CHNC ICU. Observing a quality gap in the way handoff

processes currently happen in the CHNC ICU, this author took steps to assess the clinical microsystem, conduct observations of current handoffs, and form a QI team to implement a change project designed to standardize NKE in the CHNC ICU. This change project was designed to educate nursing staff on proper handoff procedure and introduce the I PUT PATIENTS FIRST handoff tool currently approved by The Joint Commission (2017). This handoff tool is specifically designed for use in complex and critical care cases, such as those in the ICU. The QI team anticipates that using this handoff tool will promote the effective and complete transfer of relevant patient information between incoming and outgoing nurses at shift changes and improve nurse perceptions of information transfer during handoff. Initial stages of the project were implemented and a training module was developed. However, the project is currently on hold because of constraints created by the Covid-19 pandemic. The QI team intends to resume implementation once conditions allow. At that time, the team will conduct the intervention training, help coach and monitor nurse adherence to the new tool and procedures for 6 weeks, and then conduct post-implementation observations to evaluate the intervention's impact on patient handoffs.

Anticipated Key Findings

The QI team anticipates that full project implementation will show that the intervention increased the standardization of the NKE handoff processes in the CHNC ICU and improved nurse perceptions of the handoff process. The QI team expects that the initial training session and 3- and 6-week follow-up sessions will have a measurable, positive impact on the percentage of handoffs which occur at the patient's bedside, involve the patient/family, and use the I PUT PATIENTS FIRST tool to structure information exchange. This will be measured by the pre- and post-implementation observation data (see Appendix F). The team also expects that nurse

perceptions of the knowledge exchange process will improve and that nurses will feel more able to care for their patients because they will perceive that they have received all relevant patient information during handoff. This will be measured by pre- and post-intervention nurse surveys (see Appendix H).

Success Factors

The early stages of project implementation were positively impacted by the QI project team. The team structure created a space for brainstorming and refining ideas, and QI team members offered input that was instrumental in the development of the teaching plan. This author anticipates that the team members will be a vital part of the project's future success, as well. The NM and ANMs on the QI team will help instruct and coach ICU nursing staff on proper handoff process and use of the standardized tool; they will also help monitor handoff processes on the floor during the first 6 weeks after the initial training session. This will be vital to the success of the project since the author anticipates that it is during the 6-week post-implementation period that troubleshooting, clarifying, and (if necessary) re-teaching will occur, thus increasing the likelihood that nurses will correctly implement standardized patient handoff procedures.

Lessons Learned

There were many lessons learned during project implementation. Once the general project aim was established—to standardize handoff processes and introduce an ICU-appropriate handoff tool—the process of clarifying exactly what measures would be assessed and what would be the best tools for measuring them took longer than anticipated. This resulted in the need to revise and refine the survey questions several times during the early stages of the process

in order to ensure valid and reliable results. It might have been beneficial to schedule in more time to work with the QI team choosing measures and developing the survey questions.

The author waited to propose the change project and form the QI team until after conducting baseline observations of the handoffs in the ICU. In retrospect, it would have been helpful to form the QI team immediately after conducting the microsystem assessment, when the quality gap in ICU NKE processes was first identified. This would have allowed the author to solicit team members' input on the criteria to be observed. Additionally, team members might have been able to assist with conducting baseline observations, thus increasing the number of observations conducted and yielding more comprehensive baseline data.

Implications for Practice

The baseline data gathered through handoff observations indicate that there is a significant quality gap in the ICU handoff processes at CHNC. Because communication failures are responsible for approximately 30% of malpractice claims nationwide (TJC, 2017) and handoff errors specifically are implicated in nearly 80% of serious adverse events (Lee, Phan, et al., 2016), the QI project team recommends that other units at CHNC consider auditing their handoff processes to ensure that all relevant patient information is being communicated effectively during patient handoffs.

The QI team anticipates that implementation of the final project stages will demonstrate that handoff processes and patient care are positively impacted by conducting unit-scale training to standardize handoff processes using an appropriate tool. If the final results of the change project do, in fact, indicate this, then the findings could impact how other units at CHNC train floor nurses to conduct handoff. The training plan could be adapted to other hospital units, thus

creating facility-wide change to improve patient care by ensuring that handoff occurs according to best practices throughout the entire facility.

Sustainability

After full implementation and evaluation of the change project has occurred, sustainability can be facilitated through NM and ANM presence on the floor during shift change times. As noted by Lee, Phan, et al. (2016), effective monitoring is an important part of ensuring successful hand-offs, and the Nurse Manager will be better able to monitor the knowledge exchange process if he or she is present on the floor during shift changes. The Joint Commission (2017) states that an important factor in achieving successful handoffs is demonstrating "leadership's commitment to successful handoffs" (p. 3). NM and ANM presence on the floor during handoffs will help signal such a commitment on the part of unit leadership, and is likely to ensure that nurses adhere to handoff processes and policies. Additionally, adherence to handoff processes should form part of each nurse's annual competency review.

Continued involvement of a CNL will also be vital in sustaining change. CNLs have strong horizontal and vertical relationships, and they act as mentors and role models within a unit. As such, the CNL will play an active role in sustaining change by mentoring and coaching staff nurses. In this way, the CNL plays an important role in sustaining any microsystem change.

Moving forward, handoff training will need to become part of each new hire nurse's onboarding. This will ensure that all unit staff have the necessary knowledge to perform handoffs according to established processes and policies.

Limitations

Limitations of this change project include the relatively small number of handoffs observed pre-intervention. Additionally, although nurse perceptions are being used as one

measure of the intervention's success, improved nurse perceptions do not necessarily correlate to actual improvements in handoff processes. It is possible for nurses to perceive an improvement (or lack of change, or even deterioration) which does not correspond to the data yielded by actually auditing the handoff process.

Conclusions

Standardizing patient handoff procedures can result in reduced handoff times, increased knowledge exchange, and lowered risk of adverse events or nurse error. This change project was designed to introduce an ICU-specific handoff tool and to conduct nurse training to standardize CHNC ICU handoffs so that each handoff is conducted at the patient's bedside, involves the patient/family, and uses the I PUT PATIENTS FIRST handoff tool to structure the exchange of patient information from the outgoing to the incoming nurse. Patient care in the ICU involves complex, critical cases, and it is vital that nurses receive the information they need to safely care for their patients. An effective handoff process incorporating the I PUT PATIENTS FIRST tool is one evidence-based method for ensuring that this quality gap is closed.

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Appendix A

I PUT PATIENTS FIRST Hand-off Tool (Due to be printed on mini cards)

Identify yourself and role and obtain nurse's name

Patient's past medical history (medical, surgical, social)
Underlying diagnosis and procedure
Technique (general anesthesia, neuraxial, regional)

Peripheral IVs, arterial lines, central lines, drains
Allergies
Therapeutic interventions (pain medications, antibiotics)
Intubation (very difficult, moderately difficult, easy)
Extubation likelihood (already extubated, very likely, unlikely, definitely no extubation planned)
Need for drips (epinephrine, vasopressin, norepinephrine, insulin, propofol, etc.)
Treatment plan for postoperative care (blood pressure goals, ventilator settings)
Signs (vital signs during case and most recent)

Fluids (in's and out's, blood product(s), administered)
Intraoperative events (if any)
Recent labs (hemoglobin, glucose, etc.)
Suggestions for immediate post op care (ex: special positioning, pain control, need for pumps, etc.)
Timing/expected time of arrival to ICU

(The Joint Commission, 2017)

Appendix B

Pre- and Post-Training Surveys

Pre-Training Survey Questions

1. When a patient is handed off to you, all relevant information is communicated.

1	2	3	4	5
strongly disagree	disagree	Neither agree nor disagree	agree	Strongly agree

1. Is there a specific handoff tool you currently use? If so, please identify it and describe your handoff process:

Post-Training Survey Questions

1. Since practicing the I PUT PATIENTS FIRST handoff tool, when a patient is handed off to you, all relevant information is communicated.

1	2	3	4	5
Strongly disagree	disagree	Neither agree nor disagree	agree	Strongly agree

2. Describe how (if at all) your handoff procedure has changed since implementation of the I PUT PATIENTS FIRST handoff tool.

3. The training prepared you to use the handoff tool effectively.

1	2	3	4	5
strongly disagree	disagree	Neither agree nor disagree	agree	strongly agree

Appendix C

Evaluation Table

Study	Design	Sample	Description/Outcome/ Feasibility	Evidence Rating
Caruso, T.J., Marquez, J.L., Wu, D.S., Shaffer, J.A., Balise, R.R., Groom, M., … Sharek, P.J. (2015). Implementation of a standardized postanesthesia care handoff increases information transfer without increasing handoff duration. *The Joint Commission Journal on Quality and Patient Safety, 41*(1), 35-42. doi:10.1016/S1553-7250(15)41005-0 (database: CINAHL)	Prospective cohort study	41 pre-intervention handoffs were audited 45 post-intervention handoffs were audited	Standardizing handoff content and process increased nurse satisfaction, increased the amount of relevant patient information that was transferred, and did not increase the handoff duration. Overall information transfer scores increased significantly after standardized handoff training and implementation, from a mean score of 49% to 83%.	LII, A
Lee, J., Mast, M., Humbert, J., Bagnardi, M. & Richards, S. (2016). Teaching handoff communication to nursing students: A teaching intervention and lessons learned. *Nurse Educator*, 41(4), 189-193. doi:10.1097/NNE.0000000000000249 (database: Ovid)	Randomized control trial; pre-test/ post-test interventional study design	Nursing students were randomly assigned to control group or intervention group. Intervention group received handoff training. Total # of participants unclear from article; seems to be ~40.	Intervention involved one 2 hour training at the beginning of a 7-week nursing course; intervention (training) described the impact of health care errors caused by communication failures, described essential elements of handoff, and demonstrated how to use a standardized method for handoff reporting. Handoff scores post-training were not significantly different between the two groups. Explicit teaching on handoff procedures increases students' understanding of handoff and ability to recognize their own knowledge limitations.	LI, B/C (due to key info missing, such as # of participants)

Lin, M., Heisler, S., Fahey, L., McGinnis, J., & Whiffen, T.L. (2015). Nurse Knowledge ExchangePlus: Human-centered implementation for spread and sustainability. *The Joint Commission Journal on Quality and Patient Safety, 41*(7), 303-312. doi:10.1016/S1553-7250(15)41040-2 (database: CINAHL)	Quasi-experimental, analytic observational study design	125 nursing units in 14 different hospitals	Researchers examined the impact of using a "human-centered implementation"(HCI) approach to rolling out a new NKE process in nursing units across 14 different hospitals. The HCI approach involved frontline staff in coordinating implementation efforts, rather than simply directing them to comply with a "change package." In nursing units which implemented the new NKE processes, average regional HCAHPS scores for nurse communication improved from 73.8% (pre-intervention) to 77.4% (post-intervention). HCI, although it requires more time than other implementation approaches, empowered frontline teams to design solutions that fit their specific environments. This fostered both creativity and ownership.	LII, B
Usher, R., Cronin, S.N., & York, N.L. (2018). Evaluating the influence of a standardized bedside handoff process in a medical-surgical unity. *The Journal of Continuing Education in Nursing, 49*(4), 157-163. doi:10.3928/00220124-20180320-05	Non-experimental, quality improvement project following the DMAIC (define, measure, analyze, improve, and control) QI process	A 38 bed med-surg unit; 32 nurses completed pre-project scales; 25 nurses completed post-project scales 15 bedside handoffs were observed pre-project; 30 were observed post-project	Purpose was to evaluate influence of standardized handoff process on nurse perceptions of communication, handoff accuracy, handoff completeness, handoff report time, and white board usage. Focus groups identified barriers to handoff, including concerns about time required, interruptions, and variations in the handoff process from one nurse to another. There were statistically significant improvements in nurses' overall perceptions of shift report communication. Accuracy mean score did not significantly improve, although some measures did improve (such as offgoing nurse introducing oncoming nurse and identifying care barriers). There was a statistically significant decrease in length of handoff time post-implementation.	LIII, B

Zou, X. & Zhang, Y. (2016). Rates of Nursing Errors and Handoffs-Related Errors in a Medical Unit Following Implementation of a Standardized Nursing Handoff Form. *Journal of Nursing Care Quality, 31*(1), 61-67. doi:10.1097/NCQ.0000000000000133 (database: Ovid)	Prospective intervention quasi-experimental study	Pre-intervention admissions studied: n=1,963 Post-intervention admissions studied: n=1,970	A standardized nursing handoff form was designed and implemented; rates of nursing errors were then measured. Rates of nursing errors decreased from 9.2 (pre-intervention) to 5.7 (post-intervention) per 100 patient admissions. Study findings suggest that standardized handoff procedures/tools improve handoffs in terms of effectiveness and error reduction.	LII, A

Appendix D

Teaching Plan

I. **Huddle-time introduction**: Distribute fliers about handoff training

II. **Training Session** (2.5 hours, including a 15 minute cushion)
   A. Pre-training survey: Distribute and collect completed surveys (5 minutes)
   B. PowerPoint presentation: present evidence supporting the importance of standardized handoff and errors that can occur when handoff is ineffective (10 minutes)
   C. Distribute I PUT PATIENTS FIRST mini cards in plastic pockets for learners to attach to their ID badge.
   D. Instructor teaches about the handoff tool, explaining each of the 17 domains covered by the tool. (15 minutes)
   E. Simulation/Experiential training: Learners divide into groups of 3 and practice performing a handoff using the new tool. One learner communicates and begins the handoff, one receives handoff information, and one observes and offers feedback. Learners then switch roles and use a new scenario for another practice. After each learner has been in each role, learners reorganize into new groups and continue the same process. (90 minutes)
   F. De-brief: learners share their experiences and challenges, offering feedback and discussing how the tool might change their ICU handoffs. Additional small tests of change are solicited to promote adoption of the tool/technique. (15 minutes)

III. Follow-up sessions at 3 and 6 weeks post-implementation** (30 minutes each)
   A. 3 week follow-up will focus on addressing any questions, sharing experiences using handoff tool, and helping mitigate any issues.
   B. 6 week follow-up will continue addressing questions or issues and will also administer the post-training survey.

****Note on CNL Role during Teaching Plan Implementation:**

The CNL's principal responsibility during the training session will be as an educator. With input from the QI team, the CNL is responsible for creating the PowerPoint used in step II,B; leading the introductory teaching session in step II,D; developing the patient handoff scenarios for the simulation practice in II,E; and leading the debrief sessions in step II,F.

The CNL's role during implementation of the QI project in the unit (from the introductory teaching session until the 6 week followup) will principally be that of a team manager. During each shift huddle, the CNL will remind nurses about the new handoff protocols and offer observations or solutions to help overcome any barriers experienced by shift nurses. The CNL will also observe nurse handoffs during shifts.

Appendix E

Gantt Chart of Action Plan

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12	Wk 13	Wk 14
Microsystem Assessment														
Literature Review and baseline observations														
Development of training module														
Introduce plan to Nurse Managers and ANMs														
Book conference room														
Introduce training during huddle*														
2.5 hour training session (including pre-training survey)														
Nurses use handoff tool in ICU; Nursing Supervisor, Nurse Managers and ANMs monitor adherence and offer support (as needed) with coaching on the new tool														
3 week follow up session														
6 week follow up session (including post-training survey)														
Post-intervention observations: CNL, NM, and ANMs will audit 96 handoffs														
Final data analysis														
Preceptor meetings														
Prepare and submit final prospectus/paper for MSN														
Prepare poster presentation														

* The change project was interrupted by the pandemic before this stage (and subsequent stages) could occur

Appendix F

Handoff Data – Pre/Post Intervention

	Pre-Intervention	Post-Intervention	Change from pre- to post- QI implementation (+/- %)
# of nurses observed	14	**	n/a
# of handoffs observed	48	96*	n/a
# of handoffs conducted at patient bedside	14	**	**
(% of total handoffs)	(29%)	**	**
# of handoffs using a standardized handoff tool (any standardized tool pre-intervention; I PUT PATIENTS FIRST tool post-intervention)	19	**	**
(% of total handoffs)	(39.5%)	**	**
# of handoffs including patients/families	26	**	**
(% of total)	(54%)	**	**

Source: Nurse Supervisor Log [internal document]

* Indicates the number of handoff observations (n = 96) which the author *intends* to complete once hospital conditions allow for the resumption of the QI project

** Indicates data which has not yet been collected due to the interruption of the QI project by the Covid-19 pandemic. This data will be collected once hospital conditions allow for the resumption of QI project.

Appendix G

Evidence-Based Change of Practice Project Checklist

Project Title: Standardizing Patient Handoff in a northern California community hospital ICU by Implementing "I PUT PATIENTS FIRST" Handoff Tool	**Yes**	**No**
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	✓	
The specific aim is to improve performance on a specific service or program and isa part of usual care. ALL participants will receive standard of care.	✓	
The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does NOT follow a protocol that overrides clinical decision-making.	✓	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.	✓	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.	✓	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	✓	
The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	✓	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	✓	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: "This project was undertaken as an Evidence-based change of practice project at a community hospital in northern California and as such was not formally supervised by the Institutional Review Board."	✓	

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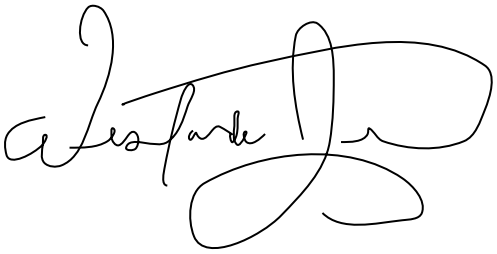
ANSWER KEY: If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

STUDENT NAME (Please print): Wislande Joseph

Signature of Student:



DATE: 5/26/2020

SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print):
Catherine Coleman

Signature of Supervising Faculty Member (Chair):

DATE__6/13/2020

Appendix H

Nurse Perceptions: Pre- and Post-Intervention Nurse Survey Data

Survey Question	**Pre- intervention mean score** (total surveys = x*)	**6 weeks post-implementation mean score** (total surveys = x*)	**Change from pre- to 6 weeks post-QI implementation** (+/- %)
Question 1: All relevant information is communicated at handoff			
1 = strongly disagree, 5= strongly agree	*	*	+/- *
Question 2: Do you currently use a specific handoff tool (any handoff tool pre-intervention; I PUT PATIENTS FIRST tool post-intervention)?			
# of respondents who said identified a specific handoff tool they use / total # of respondents	* / *	* / *	n/a
% of respondents who use a specific handoff tool	* %	* %	+/- * %
Question 3: (post-implementation only) Training prepared you to use tool effectively			
1 = strongly disagree, 5= strongly agree	n/a	*	n/a

Source: Nurse surveys completed at initial training and 6 weeks post-training

* Indicates data that will be gathered once hospital conditions allow for resumption of QI project