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Evaluation of the Nursing Handoff Process from Emergency Department to In-Patient Unit

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Abstract

Handoff, or transition in care, is known to be a danger point in the patient care process for a long time. Ineffective communication during handoff is one of the most common identified cause of catastrophic or sentinel events in hospitals (The Joint Commission, 2015). Emergency department (ED) to in-patient unit handoff is particularly vulnerable to medical errors due to high workload, time constraints, different approaches to patient care, and lack of established relationships between care providers (Ong & Coiera, 2011; Hilligoss & Cohen, 2012).

The purpose of this project was to examine and review a current process of ED to in-patient unit handoff report, to foresee possible process improvement in favor of patient care quality and safety as well as to measure nurses' satisfaction with current communication of care in one of the hospitals in the Bay Area. A comprehensive assessment of the organization, direct observations of the interunit handoff process as well as nursing staff interviews were conducted to establish a baseline understanding of the current state of the process at the hospital.

A total of 75 Registered nurses from ED and four internal medicine units were interviewed in a course of three weeks and a total of 12 interunit handoffs were observed. A few issues in structure, process, and outcomes of handoffs were identified, such as difference in unit culture, lack of teamwork and understanding between units, lack of knowledge of available tools, as well as operational failures. After thorough review of published literature on current evidence best practices in interunit handoff, a few potential interventions were identified to improve the process. One of them is a modified ED Summary Report form based on SBAR format. The form will provide a framework for communication, along with that, it will potentially eliminate redundancy in current practice and confusion between the nurses. It will also potentially increase patient safety and nurse satisfaction.

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Statement of the Problem and Rationale

Handoff communication process is the essential component of patient care and crucial for patient safety. Communication failures in handoffs are common and represent a major source of medical errors or sentinel events (The Joint Commission, 2015; Patterson & Wears, 2010). Out of 764 healthcare-related sentinel events reviewed by The Joint Commission in 2014, 489 (64%) cases were attributed to communication failures (The Joint Commission, 2015). Ten years ago, the Joint Commission has proposed a 2006 National Patient Safety Goal that called for improving patient handoffs and reduction of adverse events associated with medical errors through "a standardized approach to handoff communication" (The Joint Commission, 2006). Although there have been multiple attempts to accomplish this goal, none of the currently proposed standardized approaches have been properly evaluated or adopted universally (Hilligoss & Cohen, 2012).

Patient handoffs take place in a variety of settings and contexts. One setting received relatively less attention is from emergency department (ED) to in-patient unit handoffs (Kessler et al., 2014). This type of handoffs is more complex and contains higher risks for patients than handoffs between health care providers of the same specialty due to high workload, time constraints, overcrowding at ED, different approaches to patient care, and lack of established relationships between care providers (Ong & Coiera, 2011; Hilligoss & Cohen, 2012). Most importantly, the transfer from ED to in-patient unit usually takes place when the patient is most vulnerable, as his clinical trajectory is unclear, medical care is just initiated, and the laboratory results are still pending (Smith, 2015).

This quality improvement project was assigned to a team of a Master of Science in Nursing (MSN)/Clinical Nurse Leader (CNL) students (n=5) by the leadership of a large magnet hospital in the Bay Area. According to the leadership, there is a room for improvement of handoff process between ED and receiving units at the hospital. The hospital has taken an in-depth look into this problem and have tried different approaches to solve the issue. One of the solutions in the past was a "FastFax", when ED nurses were required to write down the handoff report and fax it. But this solution did not get a wide support from the nursing staff. The writing on the faxed report was hard to decipher, the nurses had no face to face contact and did not have opportunity to ask and respond to questions, as well as during the development of the handoff format the opinion of only one side of the process was taken into consideration, the ED. According to the leadership, the problem is present as ever, even after all the attempts to solve it.

In October 2016, the hospital launched a pilot study of a new practice of patient transfer from ED to trauma intensive care unit (ICU). Under the new practice, a few ED nurses were trained to accompany a newly admitted patient to ICU floor and give a report to ICU nurse at the bedside. At the time when the graduate students were present in the hospital, only a few new handoff communications occurred. Thus, there is insufficient data to assess the new process.

The root cause analysis was completed to study the reasons behind interunit handoff report. What are the main issues surrounding the current procedures and issues brought up by staff? What are barriers to efficient handoff report? Are the ED nurses and in-patient nurses satisfied with the current handoff communication? What can be done to improve the process?

The purpose of this practice project is to examine and review a current process of ED to in-patient unit handoff report, to foresee possible process improvement in favor of patient care quality and safety as well as to measure nurses' satisfaction with current communication of care.

Objectives of this project involved the conduction of clinical microsystem assessment by MSN/CNL students; engagement of nursing staff from the ED and selected four in-patient units to cooperate in quality improvement and examination of the issue of interunit handoffs; a critical evaluation of the current interunit handoff practice; identification of possible ways to improve the current interunit handoffs practice; the review and synthesis of handoff literature; and formulation of recommendations for future practices.

Literature Review

The aim of this literature review is to examine the nursing handoff process, it's purposes, functions, types, and impact on patient safety; to describe the interunit handoff challenges and possible solutions to overcome these challenges; as well as to identify the current ED to in-patient unit handoff best standard practices. A search of the English-language medical and nursing literature published between the years of 2000 – 2016 with CINAHL, PubMed, and Google Scholar was conducted, utilizing the following search terms: "handover", "handoff", "intra-hospital transfer", "interunit transfer", "quality improvement", "continuity of care", "patient safety", "emergency service", "intensive care units", and "medical-surgical units". In addition, manual searching was performed by examining an article's reference citations. The search has demonstrated that there has been much written regarding the purpose, function, and process of inter-shift handoffs, that occur between healthcare providers of the same department during shift change. However, very few studies were done relating to interunit transfers, when information is communicated from one department to another, such as between ED and in-patient units. Moreover, the majority of articles present physician handoffs. Little research has done on nursing handoff practices.

The communication of patient care from one health care professional to another can be known as “handover”, “handoff”, “shift report”, “end-of-shift report”, “change of shift report”, “sign-out”, “signoff”, and “inter-shift report”. For the purpose of this project, the term “handoff” will be utilized. The handoff is defined by the UK National Patient Safety Agency as “the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis” (British Medical Association, 2006, p.7). Although one of the main purposes of nursing handoffs is transfer accurate, relevant, and most current information about the patient’s care, the clinical handoffs play other important roles, such as emotional (Parker, Gardner, & Wiltshire, 1992), educational (Kerr, 2002), and social (Kerr, 2002; Patterson & Wears, 2010). In addition to these roles, the handoffs provide such functions as promotion of team building and socialization of novice nurses (Staggers & Blaz, 2013), as well as error detection (Patterson & Wears, 2010). Finally, nurses consider the handoffs as a ritual that embedded firmly in the nursing tradition and culture (Wallis, 2010).

Patient handoffs take place across the entire healthcare continuum in a variety of clinical setting. There are different types of handoffs: handoffs between specialties (interunit or intra-hospital), handoffs between different care settings (hospital admissions or discharge), as well as handoffs between shifts on the same unit (the change of shift handoff). During the handoffs, the healthcare professionals may use specialized technology (audio recorders, pagers, hand-held devices, or electronic medical records (EMR)), they can fax the handoff or give it verbally over the phone or in person (bedside or face-to-face handoff report) (Hughes, Friesen, White, & Byers, 2008).

The handoffs have significant impact on patient safety. An efficient handoff endorses the transition of important information and continuity of care and treatment (Hughes et al., 2008). However, inconsistent, incomplete, or disorganized handoffs increase patient risk and vulnerability and even can cause patient harm or death (Kitch et al., 2008). Patterson and Wears noted that, "Impacts of less than-ideal handoffs likely include adverse events, delay in medical diagnosis and treatment, redundant activities such as, additional procedures and tests, lower provider and patient satisfaction, higher costs, longer hospital stays, more hospital admissions and less effective training for health care providers" (Patterson & Wears, 2010, p. 12). Manias, Geddes, Watson, Jones, and Della (2015) conducted a survey among 707 health professionals of multiple disciplines, including nursing (60%), medicine (22%), and allied health (18%), and identified seven areas participated health professionals experienced adverse events related to clinical handoff. The areas described were: "delays in treatment or procedure, or, prolonged treatment or procedure; lack of monitoring information given on clinical assessment, leading to patient deterioration; errors involving medications; patient falls; disruptive, aggressive behaviour and confused state leading to injury; putting patients at risk of infection and putting infants at risk" (Manias et al., 2015)

Inefficient communication during the handoffs is number one cause of catastrophic or sentinel events in healthcare facilities (The Joint Commission, 2008). Approximately 50% of adverse events are the result of communication failures between healthcare providers (Manias et al., 2015). One of the studies conducted to review the critical incidents over the course of three years found that 334 handoff incidents occur during this time. The two reasons were identified causing these incidence: deficient handoffs (45%) and no handoff at all (29%) (Pezzolesi et al., 2010).

In another study that examined interunit transfers, such as between ED and in-patient units, 29% (n=139) of the surveyed physicians reported experiencing an adverse event or near miss after ED to in-patient unit transfer occurred. The surveyed physicians described 36 errors, including diagnosis errors (n=13), treatment errors (n=14), and disposition errors (n=13) after which patients experienced harm or a near miss event. Through qualitative analysis of errors reported by ED and internal medicine physicians, the researchers identified many factors that contribute to the medical errors and compromise patient safety, such as communication failure, particularly of vital signs; environment failure (ED crowding and high workload); information technology failure (insufficient access to key information, including ED physician notes and orders); nonlinear patient flow (boarding patient in ED or direct admission to internal medicine); and lack of assignment of responsibility (inadequate follow-up of pending data) (Horwitz et al., 2009).

In view of the risk of harm to patient and all other negative consequences when there is inadequate communication during the handoffs it is crucial that hospitals in general and healthcare providers particularly improve the way they share patient information during the handoffs (Bulau, 2013). In order to improve the handoff processes in the healthcare organization, the Joint Commission has proposed a 2006 National Patient Safety Goal for all accreditation programs that stresses out "… a standardized approach to handoff communication, including an opportunity to ask and respond to questions". The Joint Commission also offered some strategies for effective handoffs, such as the healthcare providers should use clear language and avoid abbreviations, utilize read-backs, standardize the handoff communication, and utilize technology like electronic records to enhance communication (Bulau, 2013).

Although the goal seems easy to implement, it is hard to develop and apply effective strategies for handoffs across diverse health care settings. The clinical handoff is a complex process that can be affected by various factors. First, physical barriers, such as noisy environment, interruptions like phone calls or call lights, as well as emotional and physical pressure may hinder the handoff process and minimize opportunity to ask and respond to questions (Friesen, White & Byers, 2008). A study analyzing communication patterns among doctors and nurses observed about one thirds of communication exchanges involved interruption, translating into about eleven interruptions per hour for healthcare providers (Coiera, Jayasuriya, & Hardy, 2002). Another study conducted by Spencer and colleagues counted even more, fifteen interruptions, in one hour (Spencer, Coiera, & Logan, 2004). Second, lack of supportive infrastructure, work overload, and difference in department or ward culture become significant barriers on a way of improving handoff process (Dyrholm Siemsen et al., 2012). Finally, interpersonal communication skills of healthcare providers and their knowledge and experience level can also interfere with the handoff process (Bomba & Prakash, 2005).

Interunit handoff has its own unique challenges that add to the above-mentioned factors. Ong and Coiera (2011) examined several critical settings, including transfer from ED, intensive care unit (ICU), operating room (OR) and radiology. According to Ong and Coiera, high workload, time constraints, and overcrowding at ED, as well as different approaches to patient care hinder ED to in-patient handoff communication. If ED provider wants to stabilize and transfer a patient without definitive diagnosis and management, in-patient physician, on the contrary, wants to know the full picture of the patient's health, as he is concentrated on long-term goals, and expects definitive diagnosis. These differences in approaches, according to researches, usually lead to the tension between the units (Ong & Coiera, 2011). Hilligoss and Cohen (2012)

provide other contextual factors that challenge the interunit handoff process, including role and specialization differences, unequal distributions of power among units, lack of established relationships among the involved parties, rare face-to-face communication, a lack of awareness of the other unit's state, and the fact that responsibility and control of patients are transferred independently (Hilligoss & Cohen, 2012). In addition, the interunit handoffs involve not only changes in personnel, but also changes in provider specialty and location. Besides, the transfer from ED to in-patient unit usually takes place when the patient is most vulnerable, his clinical trajectory is unclear, medical care is just initiated, and the lab results are still pending (Smith et al., 2015).

Despite the significance and importance of handoffs to patient safety, the research on best practices for interunit handoffs is very limited. From 2010 – 2012, three separate systematic reviews of nursing literature were conducted that specifically concentrated on search of best evidence for interunit in-patient transfers (Riesenberg, Leitzsch, & Cunningham, 2010; Ong & Coiera, 2011; Scott, Ross, & Prytherch, 2012). Three teams came to a similar conclusion that there are not enough evidence-based practices described in the nursing literature for interunit handoffs and that the field is immature. They also made individual findings. Riesenberg, Leitzsch, and Cunningham (2010) identified the barriers and facilitators to the nursing handoff as well as the most common format for handoffs: written, verbal, audio-taped (Riesenberg, Leitzsch, & Cunningham, 2010). Ong and Coiera (2011) pointed out that it is important to consider the distinct needs of the particular clinical setting that is involved in the interunit patient transfer when determining on suitable interventions (Ong & Coiera, 2011). As for Scott, Ross, and Pryterch, through their literature review, they identified the recruiting themes that provide a group of guiding principles that can be used to improve the handoff practice. The general

themes they established are structured protocol and information content, internet technology solutions, formal education in communication skills and professionalism, socio-technical approach, continuous quality improvement, cultural differences, team cooperation, patients' involvement, and indirect functions of handoff, such as social and emotional support function (Scott, Ross, & Prytherch, 2012).

The systemic reviews of physician literature (Arora et al., 2009; Riesenberg et al., 2009) also demonstrated that very little research has been completed to identify best practice. Arora and colleagues (2009) concentrate on in-patient physicians' handoffs and tried to identify methods that will improve handoffs during the change of shift as well as service change by any health professional. Although the researchers identified that technology solutions can be used as one of the interventions to improve the physician handoff process, the solutions were not available and not standardized (Arora et al., 2009). Riesenberg et al. (2009) in their literature review focused on communication barriers and strategies. Their conclusion was that although the negative consequences of poor handoff communication is well-known, almost no research has been conducted to identify best practice (Riesenberg et al., 2009).

Although there is no recommended best handoff practice in both physician and nursing literature, the literature review of the current practices revealed that there are some solutions that are worth to be taken into consideration. Some of them are presented below.

Kessler et al. (2014) conducted the largest multispecialty survey of interunit handoffs. Their goals were to describe the current status of ED to in-patient handoffs, to assess the opinion of healthcare providers about best practices for interunit handoff, and to evaluate how residents are trained to perform handoffs. Web-based survey containing 27 multiple-choice questions was distributed among 1,799 residents and attending physicians in emergency medicine and hospital

medicine at 10 urban, suburban and rural hospitals across the U.S. The response rate was 42.2 %. After receiving the survey results, Kessler and colleagues performed descriptive and quantitative analysis of the responses. In addition, they obtained qualitative data from an expert focus group of physician in both specialties. They found that standardized tools are rarely utilized and formal training of residents are occasionally performed. The use of standardized tools was reported by only 18% of reporters and only one third of reporters stated that they received formal handoff training. Of those who reported that they used a standardized tool, 29 % reported using computer template, 19% written template, 7% mnemonic template, and 45% were not sure of the tools were utilized. Even though the tools were available, only in 25% of cases, the reporters consistently used the tools. The reporters in both specialties pinpointed on several key factors to perform an effective handoff, such as identifying a patient as "high-risk", designating uninterrupted time during the handoffs, communicating specific content (the treatment administered in the ED, pertinent physical assessment finding, current vital signs, as well as test and laboratory results), and most importantly, utilizing face-to-face bedside report with patient and family involvement (Kessler, 2014).

Bed-side report considered by many researchers as one of the best methods of handoff communication, that enhances efficiency and quality of the handoff report, improves collaboration among health care professionals along with boosting patient and nurse satisfaction (Cairns, Dudjak, Hoffmann, & Lorenz, 2013). In 2012, Cronin-Waelde and Sbardella started to implement a new patient-centered transfer process from ED to in-patient units in two hospitals that are part of the Hallmark Health system. Under the new process, in-patient nurse comes down to the ED to receive a bedside report from ED nurse. The handoff communication takes place in the patient's room and includes the ED care team (the ED nurse and the ED physician

provider), the in-patient nurse, the patient and the patient family. The health care professionals follow a checklist that is essential and has specific order. The team goes through critical information, including patient's allergy and medical history. At the end, there is a time for any of the parties to ask questions. After sufficient time was spent to ask and answer questions, the in-patient nurse escorts the patient up to the internal medicine floor. Following six months after implementation of this practice, patient satisfaction raised by a full percentage point and there was a prediction that the medical errors will soon decrease by 50% (Cronin-Waelde & Sbardella, 2013).

Various standardized handoffs tools have been recommended by researches, such as Situation, Background, Assessment, Recommendation (SBAR), Subjective, Objective, Assessment, and Plan (SOAP), Handoff Intervention Tool (HAND-IT), Illness severity, Patient summary, Action list, Situation awareness and contingency planning, and Synthesis by receiver (I-PASS), and other formats to minimize adverse events, increase patient satisfaction, and prevent fragmented care (Starmer et al., 2012; Cornell et al, 2013, Abraham, Kannampallil, Almoosa, & Patel, 2014; Chapman, 2016). One of the hospitals in Michigan, it took almost 10 years to implement SBAR format during bedside handoff process. The hospital management revised hospital policy relating to handoff process several times during those years. Starting from 2009, the hospital policy included a customized Cerner® nursing communication IT tool that was created in the SBAR format within the electronic health records. In 2016, a survey was conducted to measure the nurse satisfaction with the tool. The survey demonstrated that about 80% nurses are satisfied with the SBAR IT tool during bedside handoff report (Chapman, 2016).

Abraham, Kannampallil, Almoosa, and Patel (2014) conducted a nonrandomized pre-post prospective intervention study of 82 residents' handoffs in a 16-bed urban academic hospital in

Texas. The researchers compared two standardized handoff tools: Subjective, Objective, Assessment and Plan (SOAP) and Handoff Intervention Tool (HAND-IT). The SOAP utilizes the problem-based information organizational format that consists of subjective information (e.g, patient history), objective information (e.g., vital signs), assessment information (e.g., differential diagnosis), and plan-related information (e.g., new procedures or orders). As for the HAND-IT, it was designed and developed at the researcher's site as part of a multiyear longitudinal study that evaluated the overall handoff process. This tool content is structured based on the body system model. The most important and relevant for critical care workflow systems are placed on top, such as pulmonary and cardiovascular, the less critical body systems, such as endocrinology and hematology, are placed on the bottom with other body systems between. The tool is organized in a checklist format and includes physical examination and assessment, laboratory data, problem list, medications, plan of care as well as system diagnosis for each body system. In addition, the researches incorporated into the tool such categories as patient admission, pending tasks, and important events during the past shift. After a comparative analysis of the communication behavior between two handoff tools, the researchers concluded that the HAND-IT is more beneficial than SOAP in several aspects. When HAND-IT tool was utilized, there were observed fewer communication breakdowns and greater communication interactivity, optimality, and support (Abraham, Kannampallil, Almoosa, Patel & Patel, 2014).

Benjamin, Hargrave, and Nether (2016) in their article described the Joint Commission Center for Transforming Healthcare's Targeted Solutions Tool (TST) that was used to improve handoff communication process between ED and four private physician groups serving community hospital in Juneau, Alaska. The TST is an innovative application that provides the initial steps and tools to measure the organization's actual performance, helps to identify the

organization specific barriers to effective handoff communication process, and offers possible customized solutions to address these barriers (The Joint Commission Center for Transforming Healthcare, 2016). A total of 211 random handoffs were observed: 107 handoffs during initial phase and 104 handoffs after implementation phase. In the initial phase, 29.9% handoff communication were identified as defective. The defective communications were defined as ones "that did not meet either the sender's or receiver's needs to continue caring for the patient" (p. 109). In addition to that, during the initial phase, the authors identified twelve barriers or contributing factors to defective communication utilizing the Handoff Communication Tool - Receiver and the Handoff Communication Tool - Sender (Appendix A and Appendix B, respectively). Both tools were provided by the TST. The most prevalent contributing factors that were named by the participating physicians were incomplete or inaccurate information, ineffective method, lack of standardized procedures, and poor sender knowledge of a patient. With the help of the TST, the authors created interventions that were specific to each contribution factor. Training was conducted through one-on-one meetings. After six months, there were noticed 58.2% relative reduction in defective handoff communication. Thus, the communications between the ED and in-patient physicians in the hospital were improved due to the implementation of the TST (Benjamin, Hargrave, & Nether, 2016).

In conclusion, this literature review demonstrated that over the last sixteen years the handoff communication has become an important part of the patient care process. The consequences of the inefficient handoff on patient safety were well documented. Ineffective communication at transition points of care have been identified as the most common cause of medical errors and a major source of catastrophic or sentinel events in hospitals. The contributing factors or barriers to the proper handoff were also identified. However, the

literature on the evidence-based best practice is very limited, especially in regards to the ED to in-patient handoffs. Random studies were conducted to evaluate different practices. Yet further deeper research is needed to prove their effectiveness. One of the most promising directions of research is an integration of IT technology and handoff report.

Cost Analysis

No data was provided on how many medical errors or adverse events happened in the organization in the past. Thus, it is impossible to estimate the cost for the hospital. However, on a grand scale, the adverse events and other medical errors affect hundreds of thousands of patients across the country annually. If preventable medical error was listed as a disease process, it would be the third leading cause of death in the U.S. (Abbasi, 2016). The majority of the adverse effects are preventable if there is a proper communication between health care providers. According to The Joint Commission, about 60% of serious medical errors occur because of miscommunication (The Joint Commission, 2015). The 2015 Malpractice Risks in Communication Failures report states that breakdowns in communication were identified in almost third of all malpractice cases claimed from 2009 through 2013. Furthermore, a communication failure was mentioned in the report as one of the reasons in 37% of high-severity injury cases, including death (Kern, 2016). Although the financial burden of medical errors is appraised to be $29 billion in the United States (Shields, Overstreet, & Krau, 2015), the human life and health are priceless.

Project Overview and Methodology

This project is a part of clinical immersion experience and will be conducted in a large magnet hospital in the Bay Area, California by a team of a MSN/CNL students (n=5). The

project was proposed by the nursing leadership team and was approved by clinical faculty. Four nursing units with a predictable high volume of ED admissions are selected by the leadership to participate in the project: Endocrine-Renal Medical-Surgical unit on 5B, Trauma and Neuro Intensive Care units on 2A and 2 B, and Progressive Care unit on 2 South.

The organization and system assessment will occur during the months of September through November, 2016. A mixture of assessment methods will be utilized to obtain necessary information for the quality improvement project, such as discussion with leadership (nursing directors), individual interviews with staff nurses and nursing management, review of organizational policies and procedure documents, and direct observations of the handoff procedure within the clinical areas. During the interview the nurses will be asked 11 open-ended questions (Appendix C). The primary aim of the interview questions is to explore nurses' attitudes and experiences with current handoff process. The secondary aim is to identify possible factors that affect handoff safety during interunit transfer. Final aim is to determine possible ways to improve the handoff process. The interview will be conducted during the shift, when the nurses will have some downtime to respond to questions.

In addition to interview questions, three quantitative assessments tools will be used to gather nursing perceptions and satisfaction with the current ED report to in-patient unit. First tool is Likert-Scale Nursing Satisfaction with ED to In-Patient Handoff Report, which includes 6 statements that staff will respond to using a score system from 1 to 10. Some of the statements on this tool is similar to the information that will be asked during the interview. But what differentiates this tool from the interview questions is that the Likert-scale will be provided to nurses right after the nurses received the handoff report from ED nurse in order to get the most

recent perception. Likert- scale is offered in two versions each specifically designed for ED and in-patient unit nurses respectively (Appendix D and Appendix E),

Second instrument is Handoff Quality Rating Form (Appendix F). This tool was first developed at the University of Aberdeen in the United Kingdom in 2010. Then, it was modified to meet the demand of interunit handoff assessment by Delrue (Delrue, 2013). The tool allows to evaluate the quality of a handoff communication in terms of conduct, quality of information transferred, teamwork, and circumstances of handoff and will be used as an objective assessment tool by the MSN/CNL students immediately after the observation of handoff communication. This tool can be used in two scenarios, either observing the ED nurse giving the report, or in-patient nurse, receiving the report.

Last instrument that will be used in the assessment of current handoff procedure will be Comprehensive Inventory of Information Provided in Handoff (Appendix G). It will be used also as an objective assessment tool by the nursing students, but this time the tool will be used during the observations of the handoff and will allow to identify the information that is currently provided during the handoff communication.

Clinical Microsystem Assessment

To build knowledge of the system and organization, the 5 P's framework that stands for purpose, patients, professionals, processes, and patterns of the Dartmouth Institute's clinical microsystem assessment was used. The setting for the project was a 554-licesed bed hospital, located in the East Bay, California. The hospital specializes in high and low risk obstetrics, pediatrics, neurosciences, orthopedics, cardiac, emergency, orthopedics, trauma and cancer. The hospital operates 24 hours, 7 days a week.

Purpose

The hospital's mission is to improve the health of the communities they serve with quality and compassion. As for the hospital's vision, the medical center is targeting to exceed their patients' expectations for smooth, consistently positive experiences with all aspects of health care. The main purpose of the handoff communication in the hospital is to transfer accurate, relevant, and most current information about the patient that will allow to continue safe patient care.

Patients

Patients are adults with a wide range of medical conditions that were newly admitted to ED and were transferred to in-patient units: Medical-Surgical, Progressive Care Unit, and Neuro and Trauma Intensive Care Units. The most common diagnoses of the patients are trauma or injury, gastro-intestinal disorders, cardio-vascular disease, and cancer.

Professionals

ED unit consists of RNs (the number of whom fluctuates during the shift), covering nurses, one charge nurse, two emergency technicians, an emergency physician, as well as neurosurgeons, orthopedic surgeons, and trauma surgeons. The surgeons are on call. The in-patient units are staffed by RNs who typically have a four to one patient ratio assignment with assistance from charge nurse, resource nurse, certified nursing assistance (CNAs), and unit secretary. Each of the units has one or two Nurse Managers (depending on a shift), who are responsible for the daily operations of the units and report to the Director of Nursing of their department. In addition, there are other interdisciplinary health care professionals, including primary care physicians, cardiologist, surgeons, case managers, and pharmacist. Professionalism, commitment to safe care, and readiness for improvements are main attributes of the nursing staff in ED, 5B, 2A, 2B, and 2

South. The formal leaders on this unit are the charge nurses. As for informal leaders, they are the registered nurses with the longest experience on the unit and those who usually take the role of the charge nurse.

Process

The process of ED to in-patient unit admission starts with a request form ED to admit a patient that is send to a patient placement department. The patient placement department finds an appropriate in-patient location with an available bed and sends a message through Epic (Electronic Health Record software) to that in-patient unit. The in-patient charge nurse reviews the message and the patient information in Epic and evaluates if the newly admitted patient meets criteria to be admitted to that unit. In case of positive response from the in-patient charge nurse, the emergency department receives information of the bed assignment and is starting to prepare the patient for the transfer to in-patient unit. Meanwhile, the charge nurse on the receiving in-patient unit is assigning the patient to in-patient nurse who will begin care of the patient after he/she will be transferred. The in-patient nurse receives a Sticky Note in Epic with the name and phone number of the ED nurse who is taking care of the patient. The in-patient nurse has 10 minutes to review the patient information in the electronic medical record system and to call to ED nurse to receive the handoff report over the phone. It is an expectation that ED summary in Epic will be used as the primary source of information. During the report the in-patient nurse may ask clarification questions. After the report was done, the patient is transported by the transfer nurse to the in-patient unit during a period of 15 to 30 minutes.

Patterns

The report usually takes place between two primary nurses or between ED covering nurse and the in-patient primary nurse. Occasionally, due to in-patient primary nurse being to

occupied with other patients, the charge nurse first takes the report, then gives it to the primary nurse.

Various factors may affect the handoff report from ED to in-patient unit. One factor is the timing of the report. The interunit report usually occurs from 11 am to 7 pm. This time is the busiest time for both sides, as the census on the floors are the highest during that time. The ED has created solution for this issue by doing graded shifts with more nurses working at peak times and less nurses working at low census time, such as early morning. The number of nurses working on the in-patient side does not usually fluctuate during the shift.

In addition to high census, there are other factors that also influence the handoff process. The period from 3 pm to 7 pm is the time when the change of shift report also takes place. The majority of the nurses on the in-patient unit usually work 12 - hour shifts, but there are some nurses who work 8-hour shifts. Another factor that also affects the handoff process is time constraints. The 10-minute period during which in-patient nurse has to review the patient information before calling for the report is insufficient. The nurses usually receive the report, then read the electronic documentation, while waiting for the patient to be transferred. Thus, the in-patient nurse is not ready to ask clarification questions during the handoff report.

Finally, the supporting services (environmental and transfer services) are not completing the task on time. The goal of the organization is to complete the transfer of a patient in 45 minutes after the decision of patient's admission was first done. Currently, it takes about 50 to 60 minutes to complete the transfer. There are two most common reasons for that: either the environmental services take longer time to clean the assigned room, or the transport services are not available.

Timeline

The project will be conducted between September and November, 2016. Planning, communication, and approval regarding the project will take place in September, 2016 (Appendix H). During this phase, there will be conducted several meetings with the nursing leadership team, including Executive Director of Adult In-patient Services, Director of Critical Care Services, Manager of Medical-Surgical Services, Manager of Critical Care Services, and Director of Emergency Services. During the next phase that will last from October through November, 2016 the literature review, microsystem assessment, staff and management interviews and observations will be completed. In the third phase, that will start in the middle of November, 2016 the results will be analyzed and the data and possible solutions will be presented to the leadership and clinical faculty. The final phase, writing, will be completed in December, 2016.

Expected Results

The purpose of this CNL practice project as it was stated above is to gather information regarding the current process of ED to in-patient handoff report, to explore nurses' attitudes and experiences with the process, and to identify possible factors that negatively affect handoff process. The interviews and observations will help to gain better understanding of the mechanics of the current handoff process, what type of handoff is utilized, and if the nurses use any standardized tools during the handoff communication. In addition, we expect to explore if there is a teamwork and collaboration or cultural differences between ED and in-patient units. Further, this data is expected to be helpful for the organization leadership's knowledge and for identification of possible interventions to solve the problems. Most importantly, the data will help to foresee possible process improvement in favor of patient care quality and safety.

Nursing Relevance

Provide safe patient care is number one nursing responsibility. Proper communication between nurses during interunit transfer is crucial to the continuity and safety of patient care delivery. During interunit handoff, a patient is in most vulnerable position, as it involves a transfer not only information and responsibility, but also change in physical location (Horwitz et al., 2009). Lack of collaboration, different unit cultures, different practices and goals in patient care create additional risks for medical errors. Important data points can easily be lost with inadequate communication during the handoff. Poor or inadequate communication during handoff has been identified as a common source of sentinel events (Patterson & Wears, 2010; Wentworth et al., 2012). Furthermore, it is the nursing responsibility to meet the Joint Commission's 2016 National Patient Safety Goal by improving the effectiveness of communication among health care providers.

Unique contribution of MSN/CNL students to this project is in risk reduction, team management, and education. As risk anticipators, the MSN/CNL students participated in the system and organization review to improve quality of interunit handoff and to critically evaluate and anticipate risks for patient safety with the goal of preventing adverse events and medical errors. The MSN/CNL students spent three weeks (104 hours) by doing direct observation of the handoff process and interviewing the nursing staff and management. During this time, several key problems in handoff communication were identified. After the extensive literature review on evidence best practice completed by each MSN/CNL student individually, several recommendations to solve these problems were formulated, including standardization of the process using SBAR format in ED Summary Report form that can be found in Epic. The organization assessment data as well as recommendations were presented to the nursing

leadership. That knowledge will help to improve the current practice of handoff communication, patient safety, and reach the organization's goal to provide continuously positive patient experience. In addition, this project helped to get better understanding of the unit cultures as well as nurses' attitudes and perceptions. This information might be used to facilitate team cohesion and interunit collaboration as well as improve nursing satisfaction.

Summary Report

Summary report will be presented by the steps of methodology.

Root Cause Analysis

The results of Root Cause Analysis are presented in the form of fishbone diagram in Appendix I. During the direct observations, it was noticed that there is no standardized format in handoff communication. The format varies from nurse to nurse and depends how experienced the nurse is. A novice nurse usually presents information in a free format, thus, the handoff seems disorganized and inefficient. An experienced nurse provides more detailed information and in more organized form, starting with the most current vital signs and then presenting important information that is relevant to each body system. When questioned about the utilization of the SBAR format for communication during handoffs, the ED RNs would agree that they familiar with that format, but that they did not use it often in the ED.

Another issue that was observed, is that the in-patient nurse is not able to get sufficient information from the ED nurses at the time of interunit handoff communication. Many times, during observation, the interunit handoff report was provided by the ED covering nurse who had had no or very limited interaction with the patient. When asked about the reasoning behind this practice, the ED nurses explained that due to high workload and constantly changing environment at ED, the ED primary nurses are usually not able to provide the report when the in-

patient nurses call to receive it. Thus, to help them out, the covering ED nurse steps in and provides the report over the phone to the in-patient nurse.

The way the covering nurse does the report is also questionable and adds to the tension between nurses. The covering ED nurse usually just reads the patient information that is in Epic to the in-patient nurse. This practice is very convenient for the ED nurses and in their opinion is an example of a good teamwork. Plus, they believe that this way they give at least some kind of report to the in-patient nurses, who otherwise will not receive any report at all. As for the in-patient nurses, they believe that, on one side, during such report, they had no opportunity to ask questions, and, on the other hand, they feel very offended, since they can read the records themselves and do not need to waste their time to listen to someone who reads that for them. This observation demonstrates the lack of ED nurses understanding of the importance and function of the handoff report.

Further, there were observed instances when the in-patient admission was delayed due to lack of available transport personnel or available bed. For the bed become available, the in-patient charge nurse needs to order the environmental services to come and clean the room. There were situations, when either the charge nurse forgot to notify the environmental services, or the environmental services did not come on time.

Other issues that were also identified are the wrong timing and multiple interruptions. The in-patient admissions usually occur in the middle of the day, from 11 am to 7 pm. At that time, the nurses are extremely busy with providing medications, treatments, and education to the patients. In addition, the patients are also very active during that time; they have visitors, family members, who want to discuss the patient's plan of care with the nurse. As a result, the in-patient nurses have to interrupt the handoffs to respond to the multiple call lights and phone

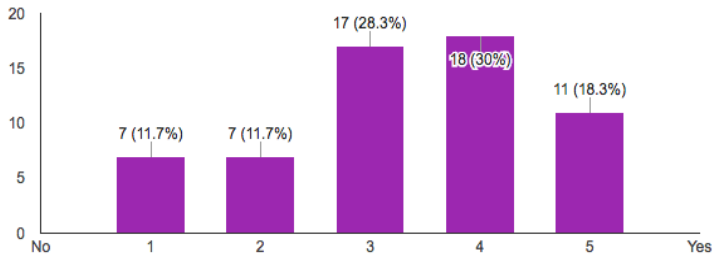
calls. Moreover, 1500-1600 well as 1800-1900 are usually the timeframes when the change of shift report takes place on the admission site, as the in-patient units have nurses who work 8-hour and 12-hour shifts. Therefore, these are the worst periods to conduct interunit transfer.

Staff Interview

Following approval from the nursing management of the hospital, the MSN/CNL students interviewed total 75 RNs: 8 RNs form emergency services, 32 RNs from medical-surgical unit, 20 RNs from intensive care unit, and 20 RNs from progressive care unit. Each interview lasted about 5 to 7 minutes. During the interview, the RNs were asked 8 to 11 open-ended questions regarding their experience, perception, and satisfaction with the current handoff process. The number of questions varied depending on the amount of free time an RN had.

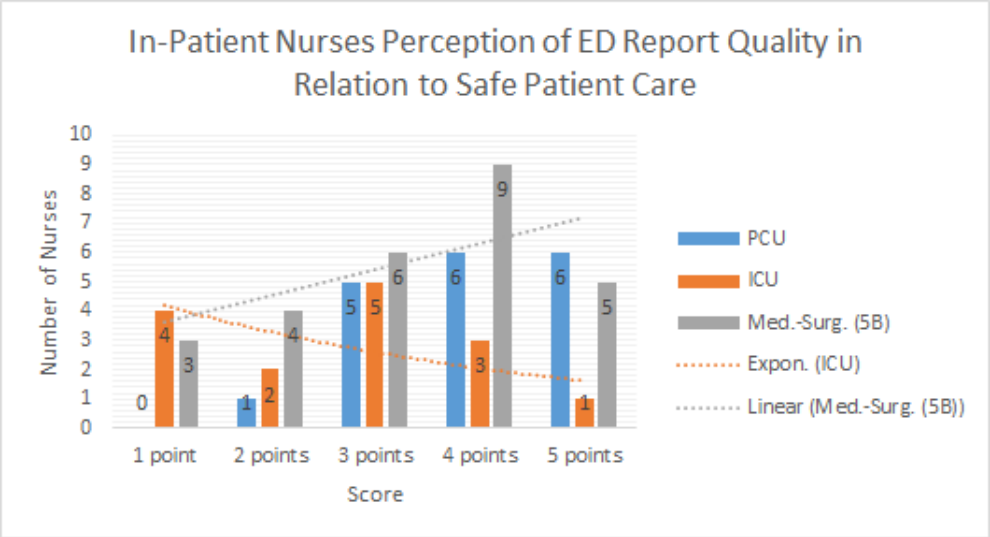
From the qualitative analysis of nurses' responses on the interview, it became clear that in-patient nurses understand that the handoff is critical to patient safety, and that they expect to receive a full accurate report from ED nurse. It is interesting to note, that about 20% of the interviewees said that their expectations currently are not met. Out of 60 in-patient RNs who responded to the question" Do you feel like the current handoff includes enough pertinent information for you to provide the best possible and safest care for your patients?', 14 in-patient RNs gave a negative response. They chose a score of 1 or 2 on a scale from 1 to 5: 1. Strongly Disagree, 5. Strongly Agree (Figure 1).

Figure 1. In-patient Nurses Perception of Quality of ED Handoff Report in Regards to Patient Safety



After a comparative evaluation of the nurses' responses by units, it was identified that there was not only a variation in opinions among units, but in some cases, the opinions were quite diagonal (Figure 2). While the majority of medical-surgical nurses believes that the report they receive from ED currently is good enough to provide a safe patient care, then the majority of ICU nurses, on the contrary, states that the information is inadequate to provide safe care.

Figure 2. In-patient Nurses Perception of Quality of ED Handoff Report in Regards to Patient Safety by Unit



There are several key facts believed to be especially important to know in order to provide safe patient care. Identification the reason for the patient admission and the medications that have been given at ED are seen as the most important components of the report, mentioned by 53.6% (n= 30) and 51.8% (n=29) of respondents, respectively. Unit specific analysis has demonstrated that MS nurses expect handoff report in SBAR format, ICU nurses requested for neuro assessment, PCU expressed desire for Head to Toe assessment report.

Interview also revealed that 35% (n=55) of in-patient RNs were involved or witnessed a near miss or a medical error because of ineffective handoff. It should be noted here that the nurses were not asked how long ago this event took place. The event could have happened

recently or long time ago. Nineteen respondents described 16 adverse events. The three respondents could not recall what happened exactly and could not give an example. The descriptions of adverse events or near misses were analyzed and organized by 5 categories. They are: delays in treatment or procedure; flaws involving medications; putting patients at risk of infection; putting patients at risk for falls; and clinical assessment or lab information omission. See Table 1 for an overview of the adverse events and the examples that the nurses provided.

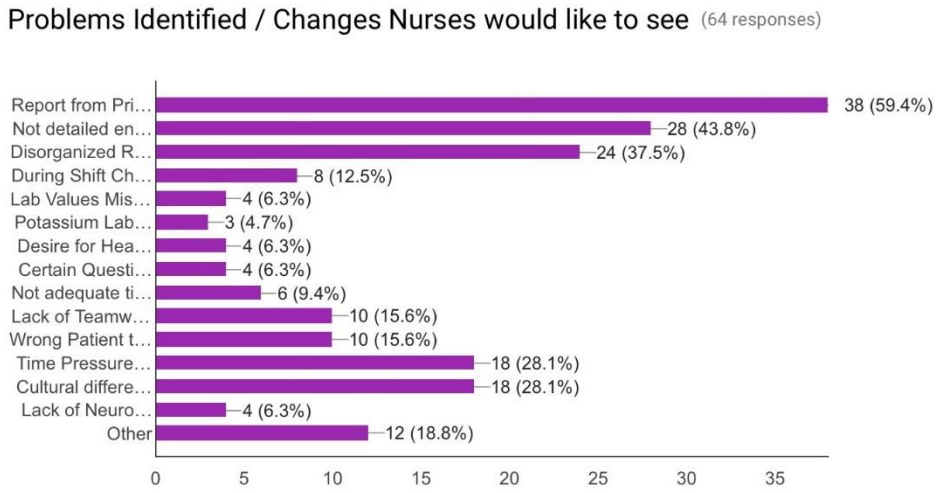
Table 1.

Categories of Adverse Events or Near Misses the In-patient Nurses Share, with empirical examples

Category of Adverse Event or a Near Miss	**Examples of narratives from interview**
Delays in treatment or procedure	"Patient had a lumbar puncture, they didn't specify when the patient had it, so the nurse wasn't sure how long the patient needed to lay flat for" (RN, PCU)
Flaws involving medications	"ED didn't say they gave a dose of a medication so she [the in-patient nurse] gave it again." (RN, PCU)
Putting patients at risk of infection	"Patient with diarrhea (not mentioned in report) roomed in double room, then have to transfer immediately." (RN, 5B)
Putting patient at risk for fall	"Not always a safe transition. ED put patient on the bed and I was busy, so they turned on the call light and left" (RN, 5B)
Clinical assessment or lab information omission	"The ED nurse reported that the patient's PICC line was changed recently and that it is okay to give the patient a tube feeding, but it turned out that the PICC line has not been changed for a long time, plus it was dislodged. The patient's safety was compromised." (RN, ICU)

There were 14 problems identified by 64 in-patient nurses in current handoff process (Figure 3). The three most cited problems were: handoff report not received from a primary nurse (38 RNs / 59%), handoff report is not detailed enough (28 RNs / 44%), the report was disorganized and was not done in SBAR formant (24 RNs / 38 %).

Figure 3. Problems Identified by In-patient Nurses



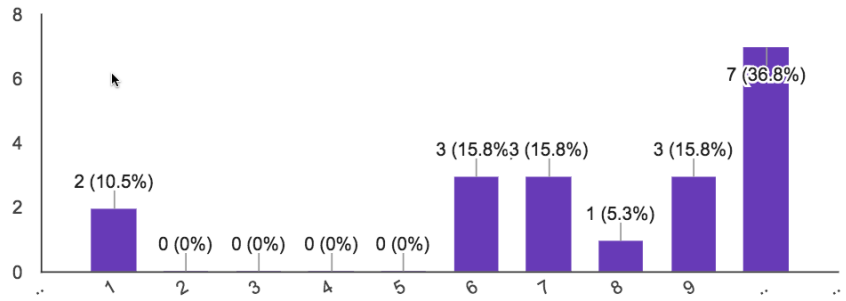
The RNs' perceptions on the best format for handoff were also evaluated. Ninety-five percent of nurses reported that verbal report over the telephone was their preferred form of communication. Some nurses pointed out that they also value when the nurse who gave report accompanies the patient to the room and provides any updates since their call. Use of the electronic medical record for patient information was identified as less appealing method.

Likert-Scale Nursing Satisfaction

The 10-point Likert scale which included 6 statements were provided to the 20 nurses (6 RNs from 5B, 7 RNs from PCU, and 7 RNs from ICU) immediately after the interunit handoff report has occurred to assess the nurses' perception of the most recent report (Appendix D and E). The Likert scale was designed in two versions: for ED nurse and for in-patient unit nurse.

One of the statements asked RNs about their satisfaction with the report they just received. Seventeen out of 19 nurses who answered responded to that statement, more or less were satisfied with the report either they provided or they received (Figure 4). It should be noted here that the majority of the nurses who received the report made a comment that the report they just received was the exceptionally good one and that usually they did not receive such a good report.

Figure 4. Nurses Response on a Statement: "I am satisfied with the current handoff procedure"



Utilizing Likert scale, the nurses were also asked a statement related to patient safety. But if during the interview the question asked for the content of the report, this time the statement was related to the handoff structure, more precisely if the handoff promotes safe patient care. The results varied but most nurses agreed that the current handoff structure, which is verbal report over the phone, more or less allows for safe patient care. They also added that this type of report gives an opportunity for an active interaction between nurses.

Handoff Quality Rating Form

The Handoff Quality Rating Form (Appendix F) was used by the MSN/ CNL students to evaluate 12 interunit handoff events: 8 reports received by in-patient nurses, and 4 reports conducted by ED nurses. The students completed the form after each individual interunit handoff event they observed. On the form, the students were able to identify what side of the

report they observe: the sending side (ED) or the receiving side (one of the three in-patient units: 5B, ICU, or PCU). They also were able to indicate how was the handoff conducted in terms of methods (verbal over the telephone, written on paper report or electronic report), as well as who the nurse was (a primary nurse, a resource nurse, or a charge nurse). Out of 12 reports observed, on a receiving site: 2 reports were taken by a charge nurse, 9 reports were taken by a primary nurse, and 1 report was taken by a resource nurse. On a sending site, 6 reports were conducted by a primary nurse and 6 reports were conducted by covering nurse.

The Handoff Quality Rating Form allowed to analyze the quality of the handoff communication in four categories: conduct, teamwork, quality, as well as circumstances (Delrue, 2013). Each category had several related statements, that MSN/CNL student rated using the following four-level Likert scale: 1 for Agree; 2 for Somewhat Agree; 3 for Somewhat Disagree; and 4 for Disagree. Utilizing this ranking system, mean scores were determined for each individual statement (Table 2). It is interesting to note that there were no differences found for the ratings on the statements related to category - teamwork. The nurses from both sides showed a good teamwork, they established the contact from the very beginning and there were no tensions observed between the nurses. The observations also demonstrated that the nurses on both sides: sending and receiving, used actively Epic during the handoff, and in general provided clear report. Significant difference was observed in the circumstances of the report: the in-patient nurses were under the time-pressure and have more interruptions during the report than ED nurses.

Table 2.

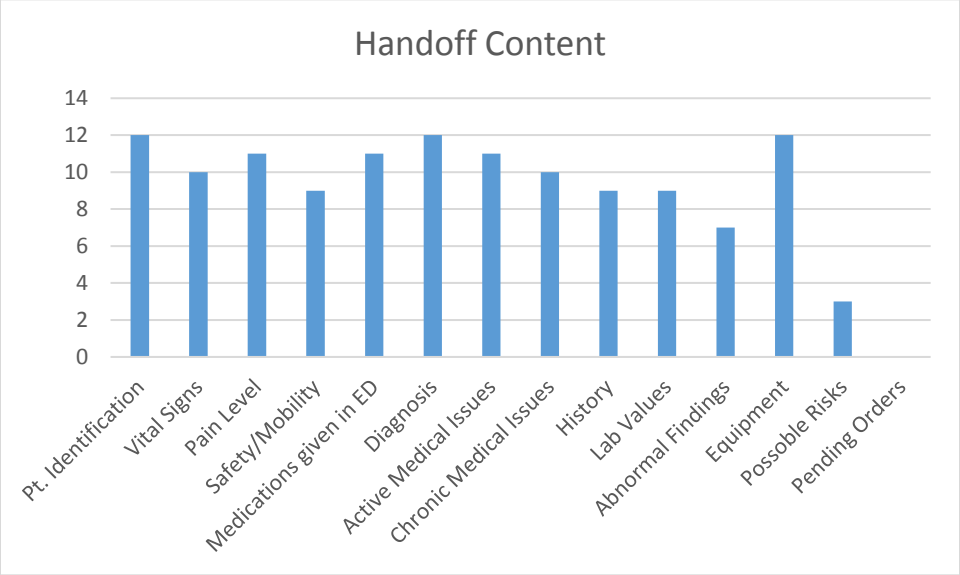
Mean Scores

	In-patient (n= 8)	**ED (n= 4)**
Conduct of the Handoff		
The handoff followed a logical structure	1	1.5
The report was given with patient records accessible to enable quick reference of patient information	1	1
The person handing off the patient communicated assessment of patient clearly	1	1
Priorities for further treatment were discussed	3	2.5
Possible risks and complications were addressed	3	2.5
Teamwork		
It was easy to establish contact at the beginning of the handoff	1	1
There were tensions during handoff	4	4
Questions and ambiguities were resolved (active inquiry by the person assuming respon1sibility for the patient)	1	1
The team jointly assured that the handoff was complete	1	1
Handoff Quality		
Documentation wa1s complete	1	1
The report was thorough and concise	2	2
The report was patient-centered	1	2
The report contained enough data to ensure patient safety	1	2
Circumstances of Handoff		
The interruptions were minimum	2	1
The person handing off the patient was under time constraints	2	4
The person taking on the responsibility for the patient was under time pressure	2	3

Comprehensive Inventory of Information Provided in Handoff

Comprehensive Inventory of Information Provided in Handoff tool (Appendix G) used by MSN/CNL students during direct observations of 12 interunit handoffs helped to identify the specific content that is currently communicated between nurses (Figure 5). Vital signs, pain level, admission diagnosis, active and chronic medical issues, medications given in the ED, abnormal findings and laboratory results were communicated in 90% cases. However, treatment plan was poorly discussed: possible patient risks were addressed only in 25% of cases and physician pending orders were not addressed at all during the observed handoffs.

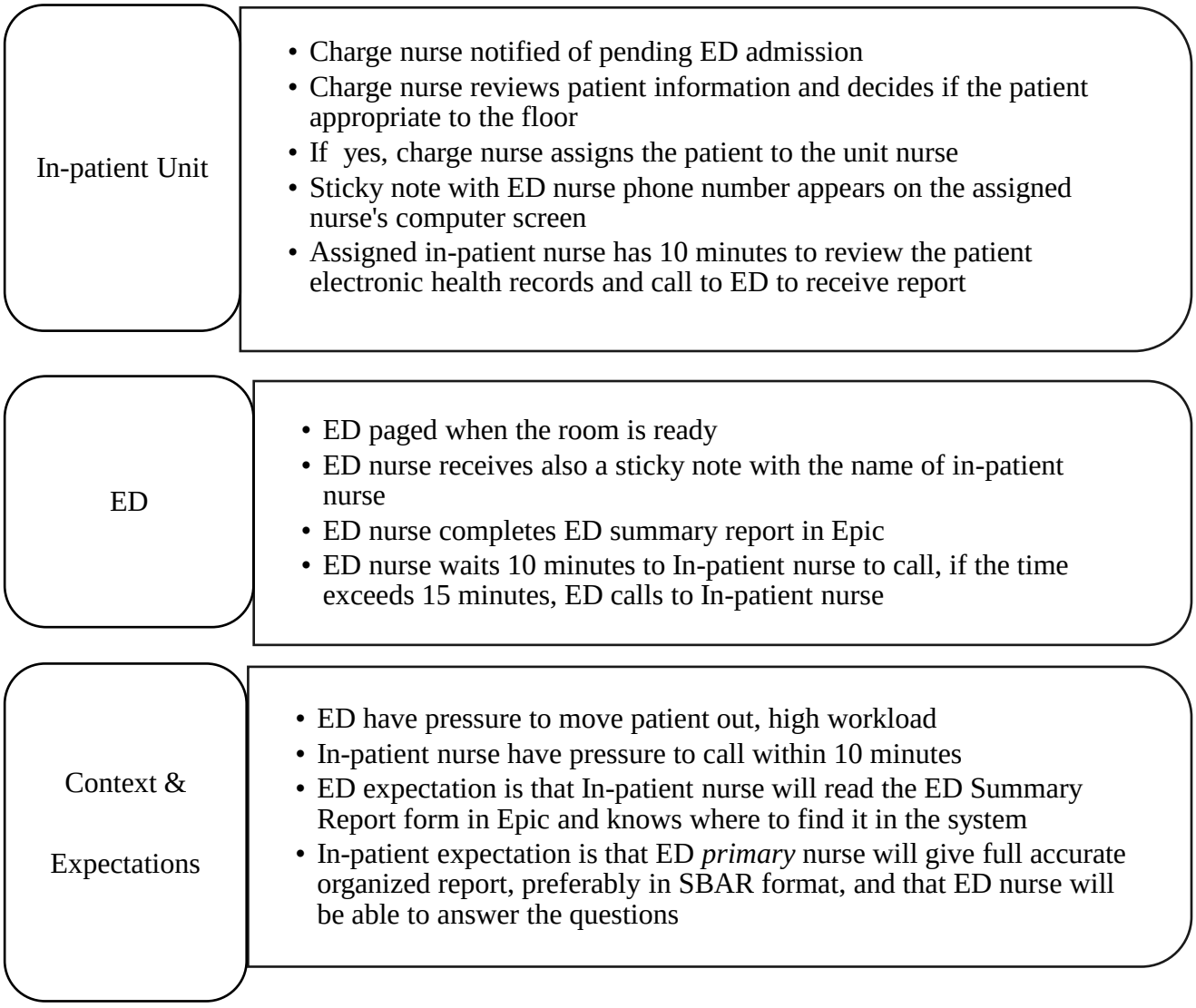
Figure 5. Information Communicated During Interunit Handoffs



Redesign of the Process and Implementation Plan

In order to redesign the process, it is necessary to have a full picture of the current handoff process as well as to understand the barriers and concerns that nursing have or deal with. Figure 6 presents the transfer workflow that is currently in place in the hospital.

Figure 6. Current ED to In-patient Unit Transfer Process



One of the greatest concerns that were collectively expressed by the nurses from all four in-patient units is that in many cases the ED nurse has a poor knowledge of the patient because she is not a primary nurse of that patient. The direct observations of the handoff events demonstrated that in 50% cases it is indeed the covering ED nurse was giving the report. At the same time, the greatest concern for the ED nurses is that they do not have time to give the report. They enter their assessment and notes into electronic health records system, Epic, which has a special form called “ED Summary Report”, and expect that in-patient nurses know about that

form in Epic and will read the information on that form before they will call them to receive the report. However, the in-patient nurse after she is assigned to a new admit, has only 10 minutes to read the information in Epic and call the ED nurse. The majority of in-patient nurses believe that the expectation that they will be able to read the information within such short period of time is not realistic, as they are usually busy at the time of admissions with other patients. In addition, about third of the nurses interviewed on medical-surgical floor (n= 32) acknowledged that Epic is too complicated, there are too many forms that require attention and sometimes information is hard to find. Some nurses also reported that they did not know about the "ED Summary Report" form. Further, the nurses have opportunity to modify their screens and, as a result, during the handoff report nurses quiet often see different screen layouts and different information that further complicates the handoff communication. Finally, the in-patient nurses expect that the report will be presented in SBAR format. To sum up, both sides have reasonable expectations, but due to time constraints or lack of knowledge they cannot fulfill the expectations of each other.

To meet the expectations of both sides and make the handoff process more efficient it is recommended to standardize the process and use the "SBAR" tool as a guide during handoff communication. The ED Summary Report in Epic can be transformed to SBAR format. Slight system adjustment needs to be done, as currently the ED Summary Report has another format. In addition, it would be useful to make the ED Summary Report tool dynamic and modifiable to allow for slight variations and unit specific report. More than 20 standardized instruments have been recommended in literature, including SOAP, HAND-IT, and I-PASS, but SBAR is the most cited one. The SBAR provides a "concise and prioritized structure that enabled consistent, comprehensive, and patient-centric report" (Cornell et al, 2013, p. 422). Besides, all the nurses

who were interviewed in the hospital stated that they are familiar with that format. Thus, there will be no need to spend time on education.

Further, it is important to inform all the in-patient nurses of availability of ED Summary Report in Epic. It can be done through mass email notification. The in-patient nurses might receive a formal training how to find the ED Summary Report. The training will not be longer than 2 to 3 minutes, as the majority of nurses are experienced Epic users. Training can be done either by Epic consult nurse, or by the charge nurse, who will receive the training from Epic consult nurse first and then disseminate that knowledge among other nurses.

In addition, it would be beneficial if the in-patient nurses have longer time (15-20 minutes instead of 10 minutes) to review the report before calling to ED unit. Finally, it is recommended to start implementation of the new process on one of the observed in-patient units first. In case of a success, the other units will be able to adopt the changes as well.

Evaluation

Due to time constraints, it was not possible to implement the recommendations fully. However, we believe that if the proposed structure (SBAR format) and content (unit specific) were included in a daily practice of interunit handoff communication, value would be added by meeting the nurse expectations, improving nurse satisfaction, advancing quality and safety care and minimizing inefficiency by removing redundancies and uncertainties.

After a few months of introduction of the new handoff process, an effectiveness of the new process will be evaluated through Post Implementation Nursing Survey that will be sent out electronically through Survey Monkey to the nurses on units involved in pilot study (Appendix J). The survey will consist of 10 multiple-choice questions. Additionally, a series of secret manager observations of nurses' interunit handoffs will be conducted. Further, each nurse will

be required to complete a mandatory online quiz featuring elements of the ED Summary Report tool.

Conclusion

This quality improvement clinical nurse leader project was assigned to a team of MSN/ CNL students (n=5) by the leadership of a large magnet hospital in the Bay Area. The focus of this clinical nurse leader project was on the interunit handoff process that occurs between the Emergency Department and four In-patient units (Medical-Surgical Unit, Trauma and Neuro Intensive Care Unit, and Progressive Care Unit). The hospital leadership articulated that there is a room for improvement of the current interunit handoff process. A comprehensive assessment of the organization and system, direct observations of the interunit handoff process as well as nursing staff and management interviews were conducted that helped to gain an initial understanding of the current state of the process at the hospital.

A total of 75 RNs from all five units were interviewed in a course of three weeks. The interviewees were asked from 8 to 11 open-ended questions that allowed to assess the nurses' perception, attitudes and experiences with the current handoff process. Interviews revealed the in-patient nurses' understanding of the complexity and importance of handoff communication to safe patient care. In addition, a total of 12 interunit handoff processes were observed and evaluated in terms of quality, conduct, teamwork, and circumstances. Through interviews and direct observations a few issues in structure, process, and outcomes of handoffs were identified, such as difference in unit culture, lack of teamwork and understanding between units, lack of knowledge of available tools, as well as operational failures (lack of standardization of the process, wrong and inadequate timing, multiple interruptions, and high workload).

An extensive review of published literature on current practices in interunit handoffs from the perspective of improving the handoff process, patient safety and quality care, patient and nurse satisfaction with the handoff process was also conducted. A few potential interventions were identified and presented to the leadership. One of the interventions was a modified ED Summary Report based on SBAR format. This intervention will potentially improve communication and structure the handoff procedure. The new handoff process will provide a framework for communication, along with that, it will potentially eliminate redundancy in current practice and confusion between the nurses. It will also potentially increase patient safety and nurse satisfaction.

The recommendations appear simple and rational and easy to sustain, as they are based on issues that were identified by the nurses. In addition, the recommendations do not involve significant process or system changes within the organization. Nurses are already familiar with SBAR format and the ED Summary Report form exists in Epic. The last should be only slightly modified. From that point of view the recommendations are feasible.

The effectiveness of the recommendations still needs to be determined. Due to time constraints, there were no opportunities to fully implement and evaluate those recommendations. However, at the moment, there is no reason to think that the recommendations would not be efficient in resolving the identified issues with the ED to in-patient unit handoff process.

Appendix A

The Hand-off Communication Tool - Receiver, as provided in the Targeted Solutions Tool® (TST®)

Joint Commission Center for Transforming Healthcare

Hand-off Communication Tool-RECEIVER

Date of hand-off (month/day/year): Time of hand-off (hh:mm):

Your role: ☐ Primary physician

Your unit: Hospital M/s CCU

Did the hand-off meet your needs to continue caring for the patient? ☐ Yes ☐ No

"If "No," please check all that apply:

☐ A. The method of communication was ineffective

Check the method(s) that were ineffective for this hand-off:

- ☐ Chart
- ☐ Electronic record
- ☐ Face to face
- ☐ Fax
- ☐ Handwritten
- ☐ Telephone
- ☐ Text message
- ☐ Other (please specify):

☐ B. The timing of the hand-off communication and physical arrival of the patient were not in sync

☐ C. The amount of time provided was inadequate

☐ D. Interruption(s) occurred

☐ E. Standardized procedures were not followed

☐ F. Staffing was inadequate

☐ G. The sender provided inaccurate or incomplete information Check all that apply:

☐ Name	☐ Past medical history	☐ Vital signs (recent changes)	☐ List of involved clinicians
☐ Age	☐ Code status	☐ Treatments	☐ Proposed next steps
☐ Gender	☐ Vital signs (current status)	☐ Diagnostic findings	☐ Equipment needed
☐ Chief complaint	☐ Labs (current status)	☐ Issues to monitor	☐ Pending tests
☐ Reason for admission	☐ Medications administered	☐ Reactions to interventions	

☐ H. The sender had little knowledge of the patient

☐ I. Although I was informed of "pending information", the sender was unable to provide up-to-date information because it was not available at the time of the hand-off

☐ J. I asked the sender to repeat/resend information

☐ K. I was unaware of the patient's arrival

☐ L. I was not able to follow up with the sender

☐ M. There was a lack of teamwork and respect

☐ N. Other

Appendix B

The Hand-off Communication Tool - Sender, as provided in the Targeted Solutions Tool® (TST®)

Joint Commission Center for Transforming Healthcare

Hand-off Communication Tool-SENDER

Date of hand-off (month/day/year):	Time of hand-off (hh:mm):
Your role:	☐ Primary physician
Your unit:	Emergency Department Emergency
Did the hand-off meet your needs to hand-off care of the patient?	○ Yes ○ No
*If "No," please check all that apply:	
☐	A. The method of communication was ineffective Check the method(s) that were ineffective for this hand-off: ☐ Chart ☐ Electronic record ☐ Face to face ☐ Fax ☐ Handwritten ☐ Telephone ☐ Text message ☐ Other (please specify)
☐	B. The timing of the hand-off communication and physical arrival of the patient were not in sync
☐	C. The amount of time provided was inadequate
☐	D. Interruption(s) occurred
☐	E. Standardized procedures were not followed
☐	F. Staffing was inadequate
☐	G. Although I informed the receiver of "pending information", I was unable to provide up-to-date information to the receiver because it was not available at the time of the hand-off
☐	H. I was unable to contact the receiver who will be taking care of the patient
☐	I. I was not able to follow up with receiver with additional information
☐	J. I was asked by the receiver to repeat/resend information that I had already shared
☐	K. The receiver was unable to focus on the hand-off communication
☐	L. The receiver was unaware of the patient's arrival
☐	M. The receiver is aware of the patient's arrival but has little or no knowledge of the patient
☐	N. There was a lack of teamwork and respect
☐	O. Other

Appendix C

Interview Questions: Nursing Perceptions on Handoff

1. Do you feel like the current handoff includes enough pertinent information for you to provide the best possible and safest care for you patients?
2. What do you think would make handoff practices better?
3. What are some of the essential components given in handoff that you could not do your job without?
4. Do you feel there is a lack in standardization in handoffs, which affects your patient's care? Do you feel that reports are disorganized?
5. Have you ever been involved in or witnessed an error or a near-miss related to lack of communication during report?
6. Do you think inadequate amount of time dictates the type of hand off you give or receive?
7. What type of handoff report do you prefer: verbal, written, faxed, face to face, etc.?
8. Is a verbal handoff preferable to a document on Epic?
9. Do you think the culture of the different floors promotes or hinders hand off report?
10. Do you believe there is teamwork between the ED and your unit?
11. What are your expectations of the other nurse during the handoff process?

Appendix D

Likert-Scale Nursing Satisfaction with ED to In-patient Handoff Report

(For ED Nurse)

1. I provided all the necessary information during the handoff report

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

2. The handoff was conducted in a professional and confidential manner

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

3. There was adequate time for handoff

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

4. I believe too much information was asked

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

5. I am satisfied with current handoff procedure

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

6. I feel the current handoff enabled safe care for the patient

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

Appendix E

Likert-Scale Nursing Satisfaction with ED to In-patient Handoff Report

(for In-patient Unit Nurse)

1. I received all the necessary information during the handoff report

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

2. The handoff was conducted in a professional and confidential manner

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

3. There was adequate time for handoff

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

4. I believe not enough information was shared

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

5. I am satisfied with current handoff procedure

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

6. I feel the current handoff structure allows me to safely care for the patient

1	2	3	4	5	6	7	8	9	10

Disagree **Agree**

Appendix F

Handoff Quality Rating Form

This observation occurred during the (check one):	How was handoff conducted (SATA)
___ Giving of Report ___ Receiving of Report	__ Phone __ Face to Face __ Utilizing EHR __ Written (on paper) __ Bed-side

The conductor of the report (check one):	The receiver of the report (check one):
__ Primary Nurse __ Resource Nurse __ Charge Nurse __ Other _____	__ Primary Nurse __ Resource Nurse __ Charge Nurse __ Other _____

	Agree	**Somewhat Agree**	**Somewhat Disagree**	**Disagree**
Conduct of the Handoff	1	2	3	4
The handoff followed a logical structure				
The report was given with patient records accessible to enable quick reference of patient information				
The person handing off the patient communicated assessment of patient clearly				
Priorities for further treatment were discussed				
Possible risks and complications were addressed				
Teamwork				
It was easy to establish contact at the beginning of the handoff				
There were tensions during handoff				
Questions and ambiguities were resolved (active inquiry by the person assuming responsibility for the patient)				

The team jointly assured that the handoff was complete				
Handoff Quality				
Documentation was complete				
The report was thorough and concise				
The report was patient-centered				
The report contained enough data to ensure patient safety				
Circumstances of Handoff				
The interruptions were minimum				
The person handing off the patient was under time constraints				
The person taking on the responsibility for the patient was under time pressure				

Appendix G

Comprehensive Inventory of Information Provided in Handoff

Mark **X,** if information was provided

Identifying information:	
___ Patient Name ___ Age ___ Patient MRN/ __ Room Number ___ ADM Date ___ Allergy	___ Code ___ Isolation ___ Fall Risk ___ Diet ___ Physician/ Attending

Background:	***Assessment:***
___ History ___ Diagnosis ___ Active Medical Issues (i.e., fever, COPD, etc.) ___ Chronic Stable Medical Issues (i.e., DM2, HTN, Asthma, etc.)	___ Pain Rate/ Sedation ___ Safety/ Mobility ___ VS (BP, HR, RR, etc.) ___ Relevant Body Systems (i.e., Cardio, Respiratory, GI, Skin, etc.) ___ Other. Specify _____

Medications, Lab work, & Imaging	***Equipment:***
___ Medications Given ___ Current Lab values ___ Abnormal Results ___ Imaging (i.e., XR, CT, US, etc.)	___ IV access ___ Tubes (i.e., NGT, etc.) ___ Foley catheter ___ Cardiac Monitor ___ Other. Specify _____

Recommendations:	
___ Possible Risks	___ Pending Orders

Comments:

_____
_____
_____
_____

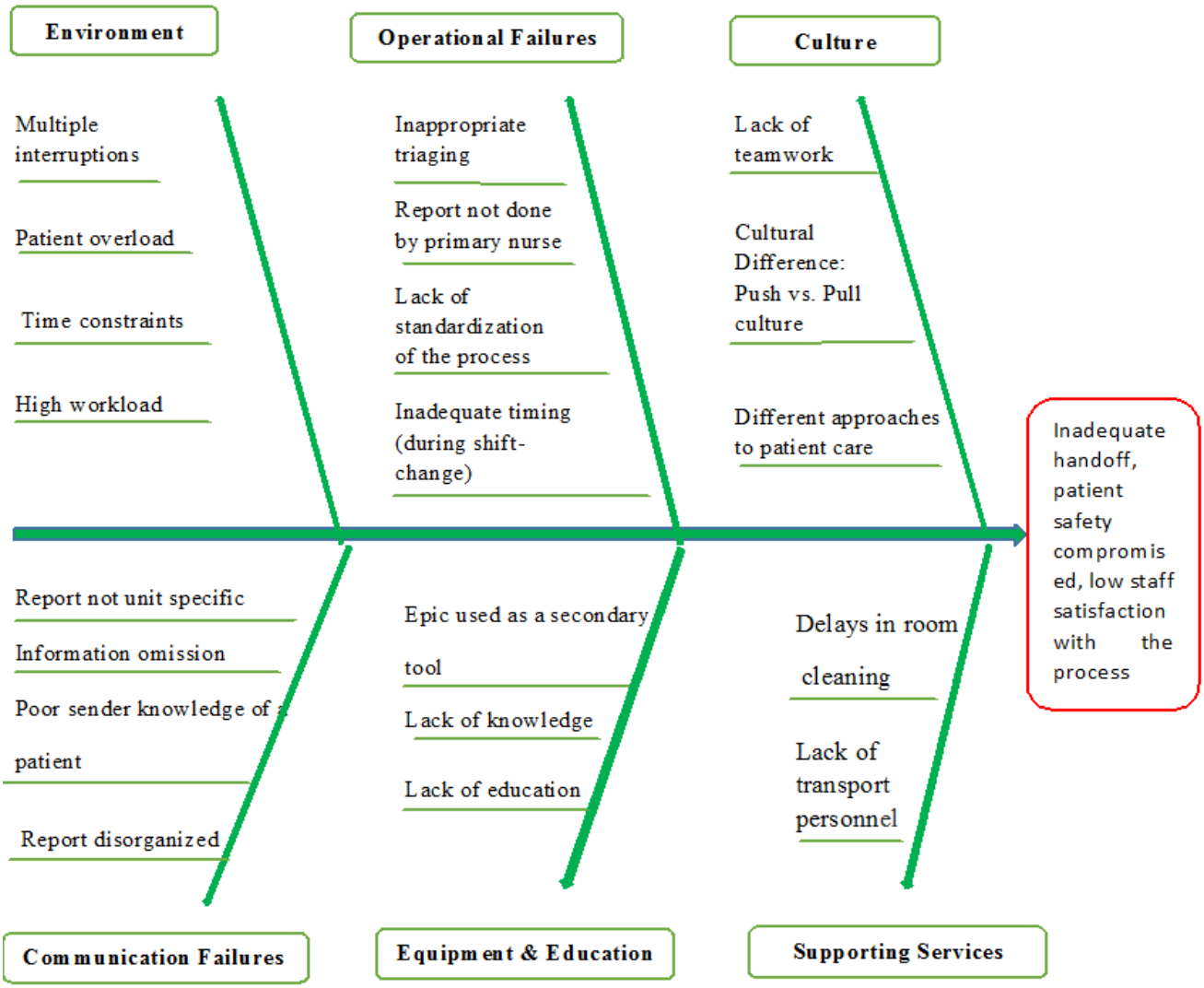
Appendix H

Timeline

Gantt Chart		2016													
		SEP				OCT				NOV				DEC	
Deliverables	**Duration**	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2
Planning phase	**4 w**														
Planning	1w														
Communication with leadership	2 w														
Approval	1 w														
Lit Review	1 w														
Observational Phase/ Data Collection	**5 w**														
Microsystem Assessment	1 w														
Observation	3 w														
Staff Interview	3 w														
Lit Review	2 w														
Analytical Phase	**4 w**														
Data analysis	2 w														
Formulation of Recommendations	2 w														
Data Presentation	1 w														
Final Phase	**3 w**														
Writing	3 w														

Appendix I

Root Cause Analysis of Barriers in ED to In-patient Unit Handoffs



Appendix J

Post Implementation Nursing Survey

1. Please indicate unit you work at:

Answer options:

- o Emergency services
- o Intensive Care Unit
- o Medical-Surgical Unit
- o Progressive Care Unit

2. What type of structured or standardized tool is currently used to assist with interunit handoff process? Please check all that apply.

Answer options:

- o Written template or guide
- o SBAR ED Summary Report form
- o No tools are used
- o Not sure
- o Other Mnemonics
- o Other tools (please list/describe)

3. How often is the SBAR ED Summary Report handoff tool used?

Answer options:

- o Almost always (about 100% of the time)
- o Usually (about 75% of the time)
- o Sometimes (about 50% of the time)
- o Rarely (less than 25% of the time)
- o Never (0% of the time)
- o N/A (We do not use one)

4. Did you receive any type of handoff training on how to find SBAR ED Summary Report form in Epic?

Answer options:

- o Yes
- o No

5. On average, how many questions are asked by the person receiving the handoff?

Answer options:

- None
- 1 - 3
- 4 – 5
- >5
- Not sure
- Does not apply to my practice

6. How often in your opinion is important information omitted during the ED to in-patient handoff process?

Answer Options

- Almost Never (About 0% of the Time)
- Rarely (About 25% of the Time)
- Sometimes (About 50% of the Time)
- Frequently (About 75% of the Time)
- Almost Always (About 100% of the Time)

7. How often is there the opportunity to ask questions or clarify information at the end of a handoff?

Answer Options

- Almost Never (About 0% of the Time)
- Rarely (About 25% of the Time)
- Sometimes (About 50% of the Time)
- Frequently (About 75% of the Time)
- Almost Always (About 100% of the Time)

8. Do you think that SBAR ED Summary Report tool in general improved the ED to in-patient handoff process?

Answer Options:

- Yes
- No
- Other (please elaborate)

9. Please rate how effective you think your organization's current ED to in-patient handoff process is.

Answer Options:

- Extremely effective
- Somewhat effective
- Effective
- Ineffective

10. How satisfied are you with your organization's current ED to in-patient handoff process?

Answer Options:

- Extremely satisfied
- Neutral
- Satisfied
- Extremely dissatisfied

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