# EMERGENCY DEPARTMENT TO INPATIENT ADMISSIONS: AN EVALUATION OF A TRANSFER PROTOCOL IN DECREASING ADVERSE PATIENT EVENTS

by

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A DNP Project Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Nursing Practice

Capella University

October 2021

## Abstract

Appropriate hand-off communication is necessary during transfers to ensure patient safety. Accurate hand-off communication is imperative to delivering high-quality, effective patient care (Muller et al., 2018). Alternatively, the absence of a standardized communication process increases the incidence of patient harm. Inadequate reporting was cited as the cause of 80% of adverse events between 2004 and 2014 (Soo-Hon et al., 2016). This quality improvement project sought to evaluate the effect of a standardized protocol on patient safety during transfers from the emergency department (ED) and inpatient unit. The developed protocol included bedside reporting, transfer times, a standardized reporting tool, early warning score (EWS), and patient visualization. A checklist was developed and used as a method of measurement to determine compliance with the protocol. Nurses working in the medical-surgical unit completed the checklists anonymously with each patient transfer. Five points on the checklists indicated 100% protocol compliance. The organization's internal dashboard was used to determine adverse patient events in the third reporting quarter of 2020, compared to the same quarter of 2021. Statistical analysis determined that 384 (N=384) checklists were completed for 411 (N=411) patient admissions. Of the 384 (N=384) checklists, 310 (N=310) received five points, indicating 100% compliance with the protocol. No adverse patient events were recorded during implementation. The quality improvement project found that using a standardized transfer protocol enhanced patient safety and created an easier workflow for nurses. Further examination is needed to determine if the protocol could be expanded to include other units in the organization.


*Keywords: Hand-off communication, standardized protocol, patient transfer*

**Emergency department to inpatient admissions: An evaluation of a transfer protocol in decreasing adverse patient events**

Clinical hand-off reporting involves the exchange of patient information between two health care providers to promote patient safety. When the patient's care is transferred from one provider to another, the receiving provider accepts responsibility for the patient's care from the reporting provider. Hand-offs are affected by various factors, including interruptions, time constraints, and improper information transfer. A standard process for hand-off reporting is imperative to high-quality patient care by maintaining continuity and patient safety (Muller et al., 2018, Mens et al., 2015).

The Joint Commission found that inappropriate hand-off reports accounted for 80 % of adverse patient events between 2004 and 2014 (Soo-Hoon et al., 2016). Incomplete or inadequate hand-off reports are a significant concern in health care. Delays in care decrease patient satisfaction and increased patient harm occurs when hand-off reports are not completed appropriately. Hermanson et al. (2020) found that incomplete hand-offs increase the length of stay, patient mortality, and morbidity. Provider errors were the primary cause of adverse patient events. These events occurred when inadequate care was provided, leading to an extended hospitalization for the patient or mortality (Muller et al., 2018).

Ineffective hand-off communication also affects organizations financially. Organizations that lack a standard hand-off communication process were at an increased risk of prolonged work processes, leading to decreased job satisfaction, frustration, nurse burnout, and decreased patient satisfaction which have negative financial implications for the organization (Naour, 2018).

Patient transfers from one unit to another in an organization were a notable concern because incomplete or inaccurate hand-offs are more likely to occur during this transition. Miscommunication and inadequate hand-off reporting have repeatedly been identified in patient transfers from the emergency department to inpatient units (Muller et al., 2018). Multiple factors affect an accurate hand-off report. Emergency department (ED) overcrowding, frequent interruptions, and time constraints have been identified barriers to successful hand-off communication during patient transfers. Hermanson et al. (2020) found that rapid response calls occurred more frequently when a formal hand-off report was not conducted between providers during transfers from the emergency department to inpatient units.

The quality improvement project was developed to address patient transfers from the ED to the medical-surgical unit to prevent adverse patient events after transfer. The project aimed to decrease adverse patient events and garner 100 % compliance with the protocol checklist. The project sought to address the developed PICOT question:

In a rural community hospital (P), does the use of a specific transfer hand-off protocol among nurses (I), when compared to the current hand-off practice (C), reduce the number of adverse patient events (O) for eight weeks (T)?

**Problem Description**

A gap in practice was identified in a small rural community hospital regarding hand-off reporting during patient transfers from the ED to inpatient units. Adverse patient events have continued to rise after transfer from the ED to the inpatient units. Metrics from the

organization in 2020 indicated two adverse patient events after the transfer, requiring a rapid response or transfer to the intensive care unit. It was determined that an adequate hand-off report had not been conducted at transfer. In both cases, an early warning score (EWS) was not provided.

In the previous year, the number of patients seen in the emergency department had significantly increased. Due to the influx of patients, a backlog of patients in the emergency department had created an unsafe environment. The rate of admissions to the inpatient unit had increased, thus increasing the likelihood of errors. A transfer protocol was used to outline specific areas to address each patient transfer to decrease hand-off reporting errors. A protocol decreases the number of adverse events due to inadequate reports, inappropriate transfers, and miscommunication to increase patient safety.

No standardized protocol or policy exists in the selected organization for patient transfers. Often, emergency department nurses did not obtain verification that the accepting nurse is available to receive the patient. Patient transfers occurred at any time of the day, even during shift changes. Transferring patients during shift change had been identified as a concern for the organization because it increases the risk of inappropriate hand-off and adverse events. Hand-off reporting between the units was also lacking. Patients were frequently transferred to the inpatient unit without the receiving nurse knowing that the patient was in the room. While a standardized communication tool was available in the organization for use, it was noted that the tool was not followed by everyone when conducting hand-off reports. If a nurse in the ED could not transfer the patient, a nursing assistant transported the patient and provided a note to the receiving nurse for the report. Often, the notes only contained basic patient information, such as medications administered and

admitting diagnosis. Necessary information, such as an EWS or patient's history, was not included. More concerning, a verbal report was not always provided, leaving the inpatient unit nurse to hunt through the medical record for information. Overall, the lack of a standardized transfer protocol had decreased workflow processes and increased the risk of patient harm.

The project was relevant to the nursing profession and the organization, as it promoted patient safety and improved communication between nurses using a standardized process of hand-off reporting. Potential impacts of the standardized protocol for the organization included improved communication, increased productivity, enhanced workflow, job satisfaction, and increased patient safety. The delivery of quality patient care was enhanced with the standardized protocol, ensuring that hand-off communication was adequate to prevent patient harm. Patient satisfaction was increased, and hospital stays were decreased, positively impacting the organization financially. The project contributed to the nursing profession because the protocol was developed to be disseminated to other medical floors and other organizations to promote patient safety. Using a standardized communication tool with an EWS alerted providers to impending patient harm earlier, allowing an intervention to occur before the situation became dire.

**Available Knowledge**

A literature review was conducted to locate journals related to the project. The search was completed using Summon through the university library. The initial search on "hand-off communication" produced 59, 575 results. The learner conducted additional searches to narrow the search and included the keywords and phrases: transfer protocols, nursing hand-off communication, inpatient transfers, and standardized hand-off communication. Literature results were not limited to nursing and included the aviation industry and physician reporting. The

search was further narrowed to include articles within the past five years. The literature search produced 76 articles, 20 of which were selected for review. The selected articles focused on standardized processes, handoff communication, checklists, and patient safety. The common themes are discussed in greater detail in the paragraphs that follow.

The absence of standardized transfer processes, time constraints, and the organization's environment have been consistently identified in the literature as barriers to patient safety (Winasti et al., 2018). An evidence-based strategy to promote patient safety during transfers between units was using a standardized process to address barriers in organizations (White et al., 2019; Winasti et al., 2018). Using the lean system minimized barriers and distractions by providing a guideline to enhance performance (White et al., 2019). Winasti et al. (2018) also found that using system-wide protocols effectively minimized barriers during patient transfers. Transfer times were decreased by nine minutes (35 to 26 minutes, $p<0.01$), and notification to transfer time decreased by 30 minutes (101 to 71 minutes, $p<0.01$) in a study conducted by White et al. (2019). In the same study, workflow processes and transfers were improved by standardized transfer protocols (White et al., 2019). Additionally, using the lean system enhanced standardized processes, ensuring that patient safety was maintained (Wojciechowski et al., 2016).

Evidence-based tools to bridge communication gaps include situation, background, assessment, and recommendation (SBAR) format or illness severity, patient summary, action list, situation awareness, and synthesis (I-PASS), frequently identified in the literature. Hand-off reporting was greatly improved, and adverse events were reduced when using a standardized communication tool (Stewart & Hand, 2017; Muller et al., 2018; Burger et al., 2017; Shahian et al., 2017). In 2008, The Joint Commission called for more effective communication using

standardized reporting processes, citing enhanced communication as a National Patient Safety Goal (Hains, 2020). A barrier to effective communication was the lack of a standardized process (Stewart & Hand, 2017). The SBAR tool promoted a more accurate and complete information exchange in multiple studies to bridge communication gaps during transfers (Steward & Hand, 2017; Muller et al., 2018). Comparably, another effective strategy to enhance transfer processes and promote communication is the I-PASS tool (Shahian et al., 2017). Both tools were evidence-based strategies to enhance communication processes to ensure patient safety and continuity of care (Muller et al., 2018).

Using the SBAR tool with an EWS during transfers provided a more comprehensive hand-off report and effectively prevented patient harm. Vital signs were a direct indicator of patient stability, and abnormal vital signs indicated a possible impending deterioration (Shahian et al., 2017). The addition of the EWS to the SBAR report forewarned providers that the patient's condition is deteriorating early, preventing patient harm (Shahian et al., 2017). Cross et al. (2018) determined that communication breakdown was a significant factor in patient harm. Omission of vital signs during hand-off reporting triggered an adverse event in 49% of cases reviewed in one study (Cross et al., 2018). Organizations should utilize a standard communication tool with vital signs to create awareness of impending patient harm (Stewart & Hand, 2017; Muller et al., 2018; Burger et al., 2017; Cross et al., 2018; Shahian et al., 2017).

A recurring theme in the literature regarding safe patient transfers was using a standardized protocol that included multiple evidence-based approaches, such as bedside reporting, patient assessment, communication tools, and transferring during appropriate times. A hybrid approach that included verbal, technology, and written transfer of information was the most effective in ensuring appropriate transfers (Tobiano, Bucknall, et al., 2018; Gu & Itoh,

2020; Soo-Hoon et al., 2016; Naour, 2018). Multi-faceted protocols that included shared accountability, transition planning, patient participation, and communication practices were found to be evidence-based strategies to promote safe patient transfers (Hains, 2020). Conversely, communication was hindered, and patient harm increased when there was a lack of standard hand-off processes (Gu & Itoh, 2020; Soo-Hoon et al., 2016). Transfer processes were completed more accurately when providers understood their roles and responsibilities (Tobiano, Ting, et al., 2020; Hermanson et al., 2020). Tobiano, Ting et al. (2020) found that nurses were unclear of their roles during hand-off, primarily when the organization used no standardized process during transfers. Only 70.77 % of nurses perceived their role as essential in ensuring patient safety during transfers (Naour, 2018). A standardized hand-off protocol was found as an appropriate strategy to create awareness of role responsibilities and foster appropriate information exchange during transfers (Hermanson et al., 2020). Moreover, a standardized protocol prompted providers to identify their roles and responsibilities during patient transfers (Tobiano, Ting, et al., 2020).

An electronic SBAR (e-SBAR) used in a transfer protocol promoted a safe, effective transfer process. One study implemented e-SBAR reporting, and no patient events were identified related to patient transfers after implementation (Potts et al., 2018). Using the e-SBAR promoted accountability and was crucial to patient transitions (Tobiano, Bucknall, et al., 2018). Additionally, one study found that implementing an electronic SBAR format was superior to a paper format, citing increased ease of use as the reason (Shahid & Sumesh, 2018).

Bedside reporting involves the transfer of information and patient care from one provider to another. Including the patient during the bedside report improved patient satisfaction, decreased falls, and prevented adverse events (Tobiano, Bucknall, et al., 2018). Lee et al. (2017)

alternatively focused on using an algorithm to safely guide transfers between units to decrease time limits and interruptions.

Checklists have been used in many industries, such as aviation, and adapted to nursing processes to promote patient safety. A checklist was an effective strategy to reduce patient harm and enhance standardized practices (Milano et al., 2019; Carman et al., 2020). Using an aviation-style checklist reduced approximately 78% of errors (Carman et al., 2020). Checklists have been widely used in surgical settings to guide practices, such as instrument collection and site identification before surgery to prevent patient harm (Carman et al., 2020). Multiple aspects of patient care were included in checklists to ensure that each transfer occurs appropriately. Code status, patient disposition, and diagnoses were just a few items included in patient safety checklists (Milano et al., 2019). Milano et al. (2019) also found that reporting time was decreased, and impending adverse events were identified sooner when using a checklist during patient transfers. Essential steps of transfers were highlighted, and situational awareness was improved when organizations implemented checklists (Carman et al., 2020).

**Rationale**

The project was founded on Lewin's Organization Theory of Change because of producing and sustaining change. Widely used in nursing, especially at the bedside, the theory provided a basis to adopt evidence-based interventions to improve patient safety (Wojciechowski, 2016). An evidence-based theory in nursing to promote change in an organization was Lewin's Change theory (Burns & Burgal, 2017). The theory has been used in nursing to provide a common framework for leading and sustaining change to promote positive outcomes and enhance patient care (Wojciechowski et al., 2016). *Lewin's Organizational Theory of Change* was a framework for change because the problem-solving process is enhanced. (Burns

& Burgal, 2017). Lewin's Organizational Change Theory provided a practical, theoretical approach to promoting change within organizations (Burnes & Bargal, 2017). Alternatively, Steg (2019) defined Lewin's Organizational Theory of Change as a process of self-regulation. The theory focused on the internal motivation system to set, revise, and meet goals (Steg, 2019).

Additionally, a feedback loop of self-regulation assisted in managing behavioral changes (Steg, 2019). The use of the lean model was identified as a necessary element, in addition to Lewin's theory in developing and implementing changes in an organization (Wojciechowski et al., 2016). Using the lean approach aided in creating, improving, and sustaining a standardized process to enhance patient care (Wojciechowski et al., 2016).

A social psychologist, Kurt Lewin (1947), developed the Organizational Change Theory as a three-step model for promoting and sustaining change. Lewin believed that change only occurred when old habits are broken, replaced with more efficient ones, and social conflicts were addressed (Burns & Bargal, 2017). The Organizational Change Theory includes three steps: unfreezing, moving, and refreezing. Practices before implementation that do not meet the organization's needs are rejected in the unfreezing stage, and new behaviors are learned (Steg, 2019). New behaviors and appropriate interventions are implemented during the moving stage to ensure the new goal is met (Steg, 2019). The refreezing phase is complete when the new behavior is solidified and adopted as the new normal (Steg, 2019).

Several fundamental assumptions regarding standardized hand-off protocols were identified. A fundamental assumption was that implementing a standardized hand-off protocol reduced the number of adverse patient events after transfer. Using the SBAR with the EWS when conducting transfer reports ensured adequate communication and prevention of patient harm. Patient safety, communication, and workflow processes were increased, while disruption were

decreased during transfer reports with the standardized protocol. Another assumption was that using a checklist ensured appropriate steps were completed during patient transfers. Assumptions were determined by research on standardized practices during patient transfer. Multiple literature reviews identified a standard protocol with specific aspects, such as communication tools, checklists, bedside reporting, and vital sign reporting enhanced patient safety (Carman et al., 2020; Cross et al., 2018; Milano et al., 2019; Muller et al., 2018). Conversely, organizations that did not use a standardized process were more susceptible to adverse patient events after patient transfers than the organizations that regularly used a standardized protocol (Soo-Hoon et al., 2016).

Multiple studies identified communication tools, such as SBAR and I-PASS to enhance communication and promote patient safety (Stewart & Hand, 2017; Shahian et al., 2017; Muller et al., 2018; Burger et al., 2017). Using the communication tools greatly enhanced the quality of hand-off reporting and ensured that an accurate exchange of patient information occurred (Stewart & Hand, 2017). Reporting vital signs during hand-off was identified as an appropriate intervention to prevent patient deterioration. Using the SBAR communication tool with EWS during the hand-off report ensured effective communication between nurses at transfer. Vital sign reporting prevented patient deterioration because abnormal vital signs are often the first indication that the patient's condition is changing. Early detection of an impending event allowed providers to quickly provide care for the patient and prevent inappropriate transfers.

Checklists that included integral parts of patient care during transfers were identified as an evidence-based strategy to promote safe patient care. Multiple studies highlighted the importance of using checklists during transfers to enhance communication and ensure the transfer protocol is followed (Tobiano, Ting, et al., 2020; Lee et al., 2017; Cross et al. 2018; Gu

& Itoh, 2020; Hermanson et al., 2020; Naour, 2018; Potts et al., 2018; Soo-Hoon et al., 2016; Tobiano, Bucknall, et al., 2018).

*Situational awareness* is a concept that involves the understanding and identification of barriers to prevent patient harm. Milano et al. (2019) found that a standardized hand-off process was minimally successful in preventing patient harm but was strengthened when situational awareness was integrated. Organizations with protocols to promote communication ensured appropriate transfer behaviors were addressed. Transfer behaviors, such as avoiding patient transfers during shift changes, were implemented to prevent chaos and miscommunication (Milano et al., 2019).

Bedside or verbal reporting when the face-to-face report was not given was essential to patient safety. Bedside reporting required nurses to conduct reports in the patient's room, allowing the receiving nurse to visualize the patient, discuss pertinent details about the transfer, and obtain clarification when needed. Patients are less susceptible to adverse events when the providers report at the bedside and include the patient in the report (Tobiano, Ting, et al., 2018). Verbal reporting was important when a face-to-face report was not given. During the verbal report, the ED nurse spoke to the unit nurse to discuss the patient and pertinent information before transfer to the medical-surgical unit.

The standardized protocol included several evidence-based interventions aimed at reducing patient harm during transfers. The project was developed to focus on transfers between the emergency department and inpatient medical-surgical unit initially but could be expanded to include other areas that accept patients from the emergency department. Additionally, the protocol could be easily adapted for use in other organizations. The protocol was developed to address the organization's primary concerns in a simple format that would enhance workflows

for nurses, thus ensuring sustainability. The organization currently uses SBAR communication for reporting, and the EWS score is a minor addition. Checklists ensured that the process was completed appropriately and identified the nurses' roles and responsibilities, created accountability and enhanced workflow. Following a standard process reduced transfer time, decreasing time constraints.

**Specific Aims**

The quality improvement project was developed with several different aims. The project sought to minimize adverse patient events after a transfer, garner 100 % compliance in completing the transfer protocol and assist nurses in preventing patient harm during transfers. The quality improvement project was developed to include a protocol to promote safe patient transfers from the ED to the medical-surgical unit and a checklist to guide completion.

The PICOT (patient, intervention, comparison, outcome, and time) question was developed to address the safety of patient transfers. The question aimed to determine if the development and implementation of a standardized hand-off protocol impacted the number of adverse events after patient transfers from the ED to the medical-surgical unit compared to current practices. The project was developed using Lewin's theory of change due to the relevance to nursing in creating and sustaining change. Using the steps of Lewin's theory of change, old habits are broken, new ones adopted, and the project was more easily sustained in the organization. The unfreezing, changing, and refreezing stages of the model were applied to the intervention. In the unfreezing stage, the nurses were introduced to the protocol and education about project completion. Staff was provided background to the significance of the new protocol and the effect on workflow processes and patient care. In the change stage, the protocol was implemented in place of current organizational practices. The refreezing stage of

the model occurred when the nurses adopted the new practice into their daily activities. Using Lewin's theory of change was an evidence-based model to guide change in an organization (Burns & Burgal, 2017). If the PICOT question was adequately answered, it was assumed that adverse events were reduced on the unit, and the number of rapid response calls was decreased. The developed PICOT question is as follows:

In a rural community hospital (P), does the use of a specific transfer hand-off protocol among nurses (I), when compared to the current hand-off practice (C), reduce the number of adverse patient events (O) for eight weeks (T)?

After eight weeks of implementation, data analysis revealed that a standardized protocol with the checklist positively impacted the number of adverse patient events. Before implementation, two patients required a higher level of care after transfer to the medical-surgical unit from the ED, compared with zero patients requiring a higher level of care after the project was implemented.

## Methods

### Context

The project focused on promoting safety in a rural 94-bed community hospital for patients admitted to the medical-surgical unit from the ED. The organizational culture focused on patient care, medically and holistically. Roles and responsibilities were clearly defined in the organization. Leadership readily accepted feedback from staff, although the decisions were ultimately made and passed down by those in leadership positions.

The patient population was culturally and ethnically diverse, and patients ranged from the pediatric population to the elderly. The nursing staff was also diverse, holding degrees ranging from associates to master's degrees. The ages of the nurses also varied, along with

skillsets and years of practice. More nurses with less than five years of experience worked in the medical-surgical unit than nurses with more than five years' experience. The organization employed more female nurses than males, with most male nurses working in the emergency department. Emergency department nurses outnumbered the medical-surgical nurses by half. Approximately seven nurses worked for one 12-hour shift on the medical-surgical unit, whereas there was double the number of nurses working in the emergency department per shift.

Stakeholder meetings were conducted to discuss gaps in current organizational practice that needed to be addressed. Over multiple conversations, transfers from the ED to the medical-surgical unit were identified as an area of improvement. The increase of adverse patient events highlighted the need for a protocol to reduce errors and promote patient safety. The assistant nurse manager discussed implementing blackout times for transfers, as well as introducing a standardized protocol. It was noted that promoting patient safety during and immediately after patient transfers was a high priority for the organization. A data review for the previous year identified a drastic increase in rapid response calls and transfers to the critical care unit immediately after transfer from the ED to the medical-surgical unit. Additional discussions with stakeholders identified miscommunication and the lack of information transfer as reasons for adverse patient events after transfer. According to another nurse manager, the project would enhance the handoff process and ensure that information was shared appropriately between the emergency department nurse and medical-surgical nurse. Multiple stakeholders offered their support and willingness to assist with the project, including the chief nursing officer and house supervisors. Additionally, many medical-surgical nurses expressed the need for a standard protocol and their excitement in

participating in the project.

**Intervention(s)**

The quality improvement project included multiple evidence-based strategies to enhance transfers from the ED to the medical-surgical unit. One intervention was to include a standardized communication tool. Using a communication tool, such as SBAR (situation, background, assessment, recommendation), has been cited as an appropriate evidence-based strategy to improve patient care (Soo-Hon et al., 2016). Another aspect of the project was the addition of bedside or verbal reporting to decrease patient harm. Black-out times were identified, and patient transfers were not supposed to occur between 630-730. Patient assessments were added to the protocol at the time of transfer. A checklist was developed to guide the protocol completion.

In 2020, the hospital had approximately 33,105 visits to the emergency department, and 3,584 inpatient hospital stays. There were approximately 800 employees. The inpatient units in the organization consisted of a medical-surgical unit, joint replacement unit, and critical care unit. As the project's primary focus, the medical-surgical unit was selected due to increased patient adverse events after transfer from the ED. The medical-surgical unit accepted transfers from the ED more frequently than the critical care unit, allowing for more reliable data due to the larger population of patients. The medical-surgical unit provided care for numerous diagnoses that include, but are not limited to, abdominal surgeries, pneumonia, myocardial infarction, congestive heart failure, and most recently, COVID-19. There are 42 beds on the medical-surgical unit, 20 recently converted to COVID-19 equipped rooms.

Inclusion criteria for the project included nurses working only in the ED and medical-

surgical units. Nurses working in the other units, such as intensive care, were excluded. Staff were excluded if they were not a nurse, which excluded nursing assistants or physicians. Only transfers that occurred between the ED and the medical-surgical unit were recorded via the checklist. The medical-surgical nurses were selected to complete the checklists for workflow continuity with each patient admission from the ED. Approximately 200 nurses participated in the project.

The first intervention for the project was the implementation of a standardized reporting tool. The selected organization used SBAR communication during change of shift reports between nurses on the medical-surgical unit. However, the SBAR tool was not always used during patient transfers between the emergency department and medical-surgical unit. The chosen standardized reporting tool was the SBAR because the organization already used the reporting tool. One addition to the SBAR report was an early warning score (EWS). An *early warning score* is a computed score that allows the nurse to recognize impending harm. Vital signs and patient alertness were assigned a score. A score of five or greater indicated impending doom for the patient, and a rapid response was called. Since the organization utilized both tools separately, they were incorporated into one tool. Cross et al. (2018) supported using an SBAR with EWS and determined that this type of reporting decreased adverse patient events by enhancing communication between providers and preventing patients' rapid deterioration after transfer.

Bedside reporting enhanced communication during patient transfers to prevent patient harm. As the second intervention, bedside or verbal reporting was included. Nurses in the organization conduct bedside report during shift changes, but this practice was not always followed during transfers from the ED to the medical-surgical unit. Researchers have

concluded that patient participation during handoff reports greatly enhanced communication and improved patient safety (Tobiano, Ting, et al., 2018). If a bedside report was not completed due to time constraints, researchers suggested that a verbal report be provided before patient transport to prevent harm. Verbal reporting was also an evidence-based strategy to increase communication (Tobiano, Ting, et al., 2018). The availability of the ED nurse to provide a report at the bedside was a concern because nurses were not always available to transport the patient. In this event, an option for verbal reporting was included in the protocol. If the nurse from the ED could not transfer a patient to the medical-surgical unit in person, the nurse provided a verbal report over the phone to the accepting nurse before transferring the patient to the unit.

"Black-out" times were added into the protocol to prevent chaotic transfers that increase patient harm. "Black-out" times specified when patients were not transported, often occurring during shift changes. As part of the transfer protocol, black-out times between 6:30-7:30 were included, allowing a 30-minute window before and after shift change. This block of time allowed the medical-surgical unit nurses to complete handoff shift reports and assess their assigned patients before receiving an admission. Since a patient admission takes 30 minutes or longer to complete, the black-out times provided ample time for the unit nurses to ensure that their current patients are cared for appropriately. The organization followed an "unwritten rule" when transferring patients from the ED and inpatient units, which were not to occur during shift changes. However, this "rule" was not followed consistently. Transfers that occurred during shift changes caused confusion, miscommunication and led to patient harm. Organizations must implement protocols designed to outline an appropriate transfer process to include "black-out" times to prevent patient harm (Milano et al., 2019).

A checklist was developed to guide protocol completion during patient transfers. Checklists provided a standard measurement of compliance and ensured that processes were followed. A standardized checklist ensured the safety of patients during transfer (Milano et al., 2019). Using a communication tool, bedside reporting, provider "sign off," and transfer times were essential in a protocol. Several researchers concluded that the checklist provided a framework for more complete and accurate transfers (Milano et al., 2019). The Agency for Healthcare Research and Quality (AHRQ) provides evidence-based strategies to promote patient safety. According to Haines (2020), the AHRQ endorsed using checklists to ensure the accuracy of information transfer, adequate transfer times, and completeness of the transfer. Another article by Clay-Williams and Colligan (2015) highlighted the importance of using checklists in patient care. A modified aviation checklist has proven to be effective in surgical care and standardized processes in nursing. Using checklists prevented the omission of pertinent patient information and ensured that the process was followed accurately (Clay-Williams and Colligan, 2015).

The project was developed to include multiple evidence-based strategies to enhance patient transfers and was outlined in a checklist to be completed with each patient transfer from the ED to the medical-surgical unit. Items included in the protocol were appropriate transfer times, bedside or verbal reporting, and SBAR with EWS. As transfers occurred, the inpatient unit nurse completed the checklist, including each aspect of the protocol. The nurses identified the transfer time, if bedside report was conducted, if a report was provided using SBAR with EWS, and the completion time for the transfer. Completed checklists were scored with a possible five points. One point was provided for each "yes" answer and zero points for each "no" answer. One point was also added for the transfer time and completion time if these

categories were completed. If the transfer time occurred between the "black-out" period of 6:30-7:30, no points were awarded. Five points on the checklist indicated that the checklist and protocol were followed 100 %.

The learner acted as the project leader by developing the protocol, gathering data, and facilitating the project's educational component. The learner developed the protocol based on existing protocols in the organization and the checklist to garner compliance. Before implementing the project, the learner provided education to the nurses via email in the ED and medical-surgical units about the new protocol and checklist. The learner also led stakeholder meetings to garner support for the project and met with the preceptor and nurse manager to discuss issues or concerns with the project. Weekly virtual meetings were held with the preceptor to ensure the protocol was implemented appropriately. The learner obtained all checklists weekly, entered the data into an electronic database, and analyzed the data after project completion.

**Study of the Intervention(s)**

The quality improvement project focused on handoff communication during patient transfers, including checklist, bedside or verbal reporting, a modified SBAR, and black-out times. The quantitative project was measured using a checklist to determine compliance with the protocol. The transfer handoff checklist assessed the completeness of the handoff report and measured the accuracy of information between the nurses during patient transfers. The checklist was introduced at the project implementation and was completed by the nurses for eight weeks to determine compliance with the handoff transfer protocol. Barriers to effective handoff practices were identified using the checklist. The checklist focused on significant areas of improvement during patient transfers, such as using a modified SBAR reporting tool

with EWS, patient assessment on admission, verbal or face-to-face reporting, and black-out times. A plan to evaluate the interventions was developed before implementing the protocol and reassessed during implementation for appropriateness. A checklist was developed to identify any aspects of the protocol that were not completed appropriately. Checklists were collected and reviewed weekly.

The project's intended impact was the reduction of adverse patient events after transfer from the ED to the medical-surgical unit. Checklists were collected weekly and compared to the number of patient admissions for the week. Checklists were also reviewed to determine completeness and identify checklists that received less than five points. A review of the data revealed that checklists were not completed appropriately with each patient transfer, so 100% compliance was not obtained. However, while the learner could not directly correlate the project implementation to reducing adverse patient events, there were no recorded adverse patient events during the implementation period. There appeared to be a positive correlation between the project and patient safety compared to current organizational practices. Since the organization currently did not use a standardized protocol for transfers from the ED to the medical-surgical unit, the observed outcomes indicated successful interventions.

**Measures**

Data was collected regarding handoff practices before and after the implementation of the project. The focus of data collection included the frequency of nurses' SBAR reporting and the number of adverse patient events before implementation, compared to the adverse patient events after the project implementation. The third quarter of 2020 was compared to the same reporting quarter in 2021 after the project implementation. The implementation goal was to determine if the addition of a transfer protocol successfully reduced adverse patient events.

The checklist was created before implementation and evaluated to determine the compliance rate of the transfer protocol, including the modified SBAR report, black-out times, EWS reporting, and patient assessment at transfer. Ongoing assessment of contextual elements occurred bi-weekly through meetings with the nurse manager and preceptor. At the mid-point of the implementation, one identified barrier to an item in the protocol was the implementation of blackout times. Due to the influx of patients through the ED, black-out times were not consistently followed during the last five weeks of implementation. Checklists were collected weekly and reviewed for completeness. Data collection occurred again after the project. After implementation, a reduction in adverse patient events supported the hypothesis that a transfer protocol successfully promoted communication and standardized transfer processes. No improvement in the number of adverse patient events would have required a reassessment of the protocol, environment, and other barriers to implementation.

The modified SBAR's validity and reliability were established before the implementation of the project. The modified SBAR tool with EWS was validated using cognitive interviews with a mixed-method instrument, inter-rater reliability, and content validation (Burger et al., 2017). The validity of the modified SBAR items was rated using a Likert scale of one to four, with one being irrelevant and four being extremely relevant. Cohen's alpha of .70 determined the inter-rater reliability (Burger et al., 2017). The reliability and validity of the modified SBAR were established. The SBAR communication tool has been proven as an evidence-based tool to promote communication among healthcare professionals. According to Haines (2020), the SBAR tool drastically decreased errors and reduced the incidence of patient harm. The SBAR was widely used by healthcare

organizations and entities, such as the Joint Commission, encouraging this tool to promote patient safety.

Handoff checklists were not established in the research as reliable or valid. However, a handoff CEX was developed and tested by researchers to determine if checklists were practical in handoff reporting. Multiple domains were studied, including communication, the setting, handoff content, provider judgment, professionalism, and organizational factors. Another domain focused on overall competency. The seven domains were assessed using a scale from one to nine. The tool was determined to indicate competencies, skills, and ease of use with little training (Horwitz et al., 2015). Results from the assessment were confirmed using the Wilcoxon test, Spearman's correlation, and paired t-tests. Horwitz et al. (2015) reported that the statistical significance was <0.05. The tool assessed the completeness of handoff reporting between nurses and was highly relevant to clinical practice. The SBAR communication tool can be found in Appendix A. The EWS scoring guide can be found in Appendix B, and the Handoff CEX is in Appendix C.

The transfer handoff checklist included the modified SBAR reporting tool, face-to-face bedside or verbal reporting between nurses, early warning score, appropriate transfer times, and patient assessment on admission. Based on the Handoff CEX, the transfer handoff checklist was used to determine the completeness of the protocol. Points were awarded for each question answered on the checklist, with a total of five points indicating 100 % compliance. Each "yes" received one point, and each "no" received zero points. Completion times and transfer times received one point if completed appropriately. No points were awarded if the transfer occurred during the black-out times. Analysis of the checklist items determined that the checklist categories occurred with equal probabilities ($p$=0.050) at a

confidence interval of 95%, which was statistically significant. The transfer protocol can be found in Appendix D.

**Analysis**

Initial data collection pre-implementation included a review of the internal dashboard on reported patient adverse events after transfer from the ED to the inpatient unit for baseline comparison. The data collected on adverse patient events reflected the organization's current state regarding hand-off reporting at the time of transfer. The collected data was analyzed for completeness and accuracy. All checklist data was collected weekly and entered in an online database, such as Excel, to monitor completion rates. Pre-implementation and post-implementation adverse patient events were also recorded in Excel. Data were analyzed and compared to determine pre-implementation versus post-implementation adverse patient events. The post-implementation data were entered into a statistical database, and comparisons were conducted using non-parametric testing.

Approximately 200 (N=200) nurses working in the ED and the medical-surgical unit participated in the project. Checklists were collected weekly and again after the project completion. Answers scored as "yes" on the checklist were assigned one point, and 'no' answers were provided a zero. If transfer and completion times are included, they were also provided one point. Transfers occurring during black-out times received zero points. Total points were tallied to obtain a final score with the highest score of five points, indicating 100% protocol compliance. Statistical measurements were conducted on the categorical data obtained from the checklists to determine accuracy. The checklist categories were identified as statistically significant, with a confidence interval of 95% ($p$=0.050). Data were then compiled into graphs and tables (see Appendix E). During implementation, 411 (N=411)

patients were admitted to the medical-surgical unit, and 384 (N=384) checklists were completed. Of the completed checklists, 310 (N=310) checklists received five points, indicating 100% compliance. 74 (N=74) checklists received less than five points, and those receiving less than four points had two or more checklist categories omitted. There were 53 (N=53) checklists that received four points, 18 (N=18) received three points, two (N=2) checklists received two points, and one (N=1) received one point. Checklist items including EWS scores, verbal reports, patient assessment, and transfers during black-out times were analyzed. A total of 51 (N=51) checklists did not include an EWS score. A verbal report was not provided in 11 (N=11) patient admissions, and patients were not assessed eight (N=8) times. 26 (N=26) patients were transferred during black-out times.

After the project, the organization's internal dashboard was reviewed for the third reporting quarter of 2021 and compared to the third quarter of 2020 to determine any change in the number of reported events. Data analysis revealed 345 (N=345) patient admissions from the ED to the medical-surgical unit during the third reporting quarter of 2020, compared to 411 (N=411) patient admissions in the third quarter of 2021. Patient admissions from the ED to the medical-surgical unit increased by 66 (N=66) when the two reporting quarters were compared. Two (N=2) patients required a higher level of care after transfer from the ED to the medical-surgical unit in the third quarter of 2020, compared to zero (N=0) patients in the same reporting quarter of 2021. The analysis revealed that adverse patient events were eliminated after implementation.

One sample binomial test completed on patient admissions and adverse patient events suggested that the null hypothesis be retained. However, the project results indicated that the protocol effectively reduced adverse patient events, suggesting that the learner's stated

hypothesis be retained. The hypothesis could be further tested using a larger sample size to gather additional data on reducing adverse patient events for a more extended period.

**Ethical Considerations**

Ethical considerations for the project were addressed during the planning and implementation of the project. Participants were provided informed consent, although consent was not needed for the project. The nurses were informed that participation in the project was voluntary, and they could withdraw from participation at any time without consequences. The protocol, checklist, and informed consent were provided via email, and participants were given a week to express concerns or ask questions before implementation.

The protocol checklist was designed to be completed by nurses anonymously, and no personally identifiable patient information was collected. Checklists were completed by checking “yes” or “no” and completing transfer times. The project was developed to gather pertinent data without risking the identities of the persons involved. Completed checklists were stored in a sealed envelope on the unit and were collected every week by the learner. The checklists were transported from the facility in a sealed folder and stored in a file cabinet.

The unit manager or nurse manager accessed the internal dashboard for the organization to obtain the number of patient admissions and transfers to a higher level of care, as the learner did not have access to sensitive information. Data was then provided to the learner as numerical data only. Data from the checklists and the internal dashboard were entered into the electronic database as numerical data only. As the collection of personal information was not conducted, multiple ethical considerations were eliminated.

**IRB review and conflicts of interest**

Before initiating research activities, the learner obtained an internal review board (IRB) approval from the organization and university. Both entities deemed the project "non-human research." The project did not require a full IRB review for approval. Submitted documentation included the project prospectus, proposed communication tools for the project, and an extensive explanation of the project's purpose. The learner completed collaborative Institutional Training Initiative (CITI) training for the organization and the university as part of the approval process.

Conflicts of interest were also addressed during the development and implementation of the project. As a current employee in the organization, conflicts of interest were managed by limiting shifts worked at the bedside, and the learner did not accept transfers from the emergency department. Limiting the number of shifts worked decreased any influence of the learner on the project completion. The learner worked one bedside shift during the implementation of the project. Additionally, during the shift, the learner did not complete any transfer checklists or accept any patient admissions from the ED, ensuring that the data collected was not skewed. The learner did not engage in any data collection or project activities during the shift.

During on-site visits to collect the checklists for data analysis, the learner only interacted with the organizational preceptor or nurse manager, further reducing the influence on staff members. Due to the working relationship with nurses on the medical-surgical unit, the learner attempted to minimize any conflicts of interest by limiting contact with the nurses. Contact with nurses during the project implementation was restricted to the first day of project implementation, mid-point implementation, and again on the final day to prevent influencing the project. The preceptor collected and stored the checklists in a locked office, and the

learner obtained the checklists directly from the preceptor. The preceptor or nurse manager acted as an oversight committee and notified the learner if any concerns or issues arose during implementation.

**Results**

The project's interventions were developed to incorporate multiple evidence-based strategies to reduce patient transfers to a higher level of care. Using a standardized reporting tool, black-out times, reporting of EWS scores, and bedside reporting were included in the transfer protocol. A timeline was developed to direct implementation. There were no modifications to the initial intervention timeline, and the project progressed as planned. Processes were measured by collecting the checklists weekly and compared to the number of patient admissions from the emergency department for the week.

The checklists measured the completeness of transfer and the compliance of the nurses with the protocol. There were 411 (N=411) patient admissions, and 384 (N=384) completed checklists during the project implementation. A comparison of patient admissions and completed checklists revealed that 27 (N=27) checklists were not completed at all. A total of 74 (N=74) checklists received less than five points. Checklists receiving less than four points included multiple omitted protocol items (see Appendix E).

Of the completed checklists, 310 (N=310) checklists received a total of five points, indicating 100 % compliance with the protocol. A total of 53 (N=53) checklists received four points, 18 (N=18) checklists received three points, two (N=2) checklists received two points, and one (N=1) checklist received one point (see Appendix E). The analysis of checklist completion suggested that nurses completed the checklists at least 95 % of the time.

Total admissions between the reporting quarter of 2020 and the same reporting quarter of 2021 revealed 345 (N=345) patient admissions from the emergency department to the medical-surgical unit and 411 (N=411) patient admissions, respectively. A difference of 66 (N=66) patient admissions occurred between the two reporting periods. During the reporting quarter of 2020, two (N=2) patients required a transfer to a higher level of care after admission to the medical-surgical unit from the emergency department. After project implementation in the same reporting quarter of 2021, no recorded adverse patient events (N=0) or transfers to a higher level of care after admission from the emergency department to the medical-surgical unit (see Appendix E).

The interventions were affected by several contextual elements. Contextual elements included aspects such as teamwork, leadership, and communication. One factor that affected the intervention was the resurgence of COVID-19. The ability of the nurses to follow the protocol completely was altered by the influx of patients into the ED. Black-out times were not followed as closely during the project's last five weeks, and reporting of EWS scores before patient admission also decreased. The increased pace of admissions to the medical-surgical unit from the emergency department hindered accurate and appropriate communication between the nurses. During this period, increased workloads and short staffing also contributed to the inability to complete the protocol with each patient transfer. The increase in patient admissions was an unexpected event that could have altered the results of the project implementation.

Another element that affected implementation was the belief by some nurses that the protocol was not 'necessary' or would not make a difference in patient safety. Some nurses stated a refusal to participate because it required too much time, while others said that they

preferred to continue to conduct transfers ‘the way it has always been done.’ The refusal of the nurses to participate affected the rate of checklist completion. Interestingly, the influx of patients from the ED to the medical-surgical unit and the incomplete checklist completion did not adversely affect the number of patients requiring a higher level of care after transfer.

Organizational leadership was an unexpected positive benefit identified during implementation. The nurse manager encouraged teamwork and supported the implementation, often reminding nurses to appropriately complete the protocol and checklists. The manager encouraged teamwork and often assisted during transfers from the ED to the medical-surgical unit. In multiple discussions with the manager, plans to continue the project were discussed. Enforcement of black-out times was discussed as an essential component to ensuring the protocol is successful.

Additionally, since the protocol incorporated practices already used in the organization, the protocol was submitted formal review and approval for future use by the organization. If accepted, the protocol will be disseminated across the organization to include other units in the hospital and will become standard practice. The SBAR and EWS are used by the organization currently and would not require any additional training for the staff or financial support by the organization to adopt. Recommendations for future practice include adopting the protocol to other units in the hospital for an extended period. Further data review should be conducted to determine how successfully the protocol reduces adverse patient events after transfer. The protocol could be implemented across hospitals under the more prominent academic medical center to gather more robust evidence.

While the learner was unable to definitively attribute the reduction of adverse patient events to the project implementation, there is strong evidence to suggest that following a

standardized protocol enhances patient safety. Adverse patient events were eliminated during the implementation of the project. Nurses completed the checklists with most patient transfers, and most of the checklists were completed appropriately, although 100 % compliance with the checklist was not obtained.

## Discussion

### Summary

The development of the quality improvement project to decrease adverse patient events after transfer from the ED to the medical-surgical unit promoted communication and continuity of care to enhance patient safety. One specific aim of the project was to decrease adverse patient events and the number of patients requiring a higher level of care after transfer from the ED to the medical-surgical unit. Analysis of the data revealed that there were no recorded adverse patient events after the project implementation, compared to current practices in the organization. The project revealed that a checklist promoted more effective communication among nurses during patient transfers, and the protocol provided a guideline for safe patient transfers from one unit to another. Checklists provided a foundation for safe practices and effective communication (Milano et al., 2019; Carman et al., 2020). The reduction in adverse patient events suggested that the protocol strengthened the transfer process to prevent patient harm, and the checklist served as a guideline to protocol completion.

While 100 % compliance was not obtained during the project implementation for checklist completion, the data revealed that a substantial number of nurses did complete the protocol appropriately. Out of 411 patient admissions, 310 checklists garnered five points or 100 percent compliance with the protocol. It is unknown if the protocol was followed for the

27 checklists that were not completed. While no adverse patient events were reported during implementation, the omission of the checklist indicated that the protocol was not followed, thus increasing the risk of patient harm. Checklists were imperative to promoting patient safety by ensuring that each aspect of a protocol or process is followed. Any missed portion of a checklist impacts patient safety and causes adverse patient events (Milano et al., 2019).

Issues with the project, such as the inability to follow black-out times, were reviewed and revised for improvement for future use in the organization. Of the 384 checklists that were completed, 26 checklists indicated that a patient transfer occurred during the black-out time of 630-730. Again, while no adverse patient events occurred during implementation, transferring patients during black-out times could trigger an adverse patient event.

One strength of the project was the simplicity and availability of the checklists. The checklists were developed to be simple, easy to use, and did not require additional time to complete. Multiple nurses working on the medical-surgical unit reported that the checklist was “quick” and “easy.” Others suggested that the checklist only took “one extra minute” to complete during a transfer. Another strength was the protocol itself because it included various actions and tools already used in the organization and combined them into one standard process. The protocol did not include any “new” nursing functions or actions to perform. One nurse suggested that the protocol made the job effortless because it “tied everything together neatly.”

Additionally, the project developed several questions to be answered in the future, such as: How would being able to follow blackout times impact the process? What were the nurses’ perceptions about the project in promoting patient safety? How effective would the protocol be in other inpatient areas, such as intensive care units?

**Interpretation**

All the interventions of the project were aimed at reducing adverse patient events. Multiple evidence-based interventions were included in the project to address each aspect of patient safety, such as a standardized communication tool, reporting of EWS scores, patient visualization at transfer, bedside reporting, and blackout times. System-wide standardized processes, including several evidence-based interventions, were essential to reducing patient harm (Winasti et al., 2018). A standardized communication tool with EWS reporting was included in the protocol to enhance communication between nurses and promote the accurate transfer of information. SBAR reporting with EWS scores enhanced patient safety by alerting providers to impending adverse events (Shahian et al., 2017).

Bedside reporting and visualization of the patient at transfer provided the receiving nurse with an opportunity to assess the patient at transfer quickly. Bedside reporting was cited as a vital component of patient transfers to promote safe patient care (Tobiano, Bucknall, et al., 2018). Black-out times were added to the protocol to ensure that patient transfers did not occur during high-stress times, such as shift changes, in the nurses' shift. Patients transferred during critical times, like shift changes, were at an increased risk of suffering an adverse event during or immediately after transfer from one unit to another (Shahian et al., 2017).

The checklist included each aspect of the protocol, ensuring that patient transfers were conducted according to the protocol. Checklists were invaluable tools to determine if protocols were followed. Including every aspect of a protocol, checklists detailed the appropriate steps required to follow protocols with each patient transfer. Errors were reduced by approximately 78% using checklists (Carman et al., 2019). There were no reported adverse

events during the implementation of the protocol and checklist, indicating that 100 % of errors were reduced.

Decreased adverse events after patient transfer from the ED to the medical-surgical unit impacted the organization in multiple ways. Patient satisfaction scores increased, leading to improved scores for the hospital. Additionally, the organization benefits financially through reimbursements by Medicare and Medicaid or by increasing patients seeking care at the hospital. Standard processes that ensure patient safety benefit organizations by enhancing staff workflows, increasing teamwork, morale, and job satisfaction. Increased staff error, decreased job satisfaction, prolonged workflows for staff, negative financial impacts, and increased patient harm occurs when organizations do not employ a standardized process to direct patient care (Naour, 2018). Staff retention also impacts the organization, as there would be less financial impact than hiring and training new employees. Additionally, patient safety was enhanced using standardized processes. Standardized processes in an organization decreased patient harm, improved patient care, and decreased adverse patient events (Tobiano, Bucknall, et al., 2018).

While the anticipated outcome of the project was met, several differences in observation occurred. One observation was the unintended elimination of the black-out times. The influx of patients during the project prevented nurses from following black-out times as intended. The resurgence of COVID-19 during implementation eliminated the ability to 'hold' patients in the ED. When a room was available, nurses transferred patients without regard to the current time to provide care as quickly to other patients as possible.

Another surprising observation was the incomplete checklists that were collected. It was anticipated that checklists would be completed 100 % with each transfer. More

surprisingly, the number of times that an EWS score was not provided during the transfer of the patient from the ED to the medical-surgical unit. The DNP learner anticipated that an EWS score would be provided consistently with each transfer. Again, the influx of patients could have impacted the results due to time constraints.

The implementation of the project in comparison to current practices was a positive strategic trade-off. A strategic trade-off occurs when activities are incompatible and following one strategy alters another strategy. The lack of a current strategy in the organization increased the risk of adverse patient events while implementing the quality improvement project appeared to decrease the risk of adverse patient events. The quality improvement project was more aligned with the organization's core values of service, safety, excellence, and integrity compared to the current practice. Opportunity costs were gained when the protocol replaced current practices. The organization gained a standardized process to prevent patient harm, staff were provided a guideline for transfers to ease their workload, and patients, in turn, were provided more effective care.

**Limitations**

Limitations to the project included various aspects, such as the sample size, history, and contextual elements that could influence the project outcome. Only two units were selected to participate in the project implementation, reducing the sample size of nurses and patients. Smaller sample sizes could skew results and inaccurately represent the organization overall.

'History' had an impact on the project results. Outside events affected the variables in the study. The surge of COVID-19 cases in the middle of the project implementation drastically increased the number of ill patients admitted to the medical-surgical unit. Patient

overload in the emergency department created an increased risk of inadvertent admissions to the incorrect unit. Nurses were required to transfer patients when a bed became available, increasing transfers during black-out times and omission of EWS scores before patient transfer. The severity of patient illness could have increased the number of adverse patient events. However, the increase of patients allowed for more data than could have previously been collected.

Along with the influx of patients, staffing concerns also affected the results. There was significant staff turnover during the implementation period, resulting in increased workloads for the remaining staff. The increased workload prevented some nurses from following the protocol or completing the checklists. Staffing shortages had an unintended impact on the project results. Additionally, the organization merged with a more extensive medical entity during the implementation of the project, causing unease and tension among the staff due to new policies and procedures that impacted the nurses' daily job duties.

All participants were specifically selected to participate in the project based on their job duties, limiting the number of participants for the project implementation. The selected nurses were 'non-random,' but their varying roles may have increased the risk of pre-existing differences. All the participants were nurses selected from both the emergency department and medical-surgical units. However, the nurses varied in years of experience, skill level, and age. Some nurses were registered nurses, while others were licensed, practical nurses. The nurses working in the emergency department had very different roles than those working in the medical-surgical unit. Nurses that had worked in the organization for a more extended period had grown accustomed to the current practices in the organization and showed some hesitancy in implementing the project. Some felt it was a "significant" change in their daily

duties. Their bias to current transfer practices was identified as a limitation of the project because some nurses refused to participate. Other nurses were more agreeable to implementing the new protocol. The selection of the participants from only two units could have influenced the results of the project. The selection of only two units with a smaller sample size of nurses and patients may not be generalizable to other units or organizations. Further research is needed on a larger scale to determine if the protocol would be successful in a larger sample size.

More checklists were completed fully and accurately than those not completed appropriately, suggesting that nurses experienced the Hawthorne Effect. This effect occurs when participants that are being monitored act differently than they would otherwise. The accurate completion of most checklists suggested that nurses completed the checklist appropriately during the project implementation because the nurse manager monitored the process. Participation by the nurses could have occurred due to the fear of negative consequences or to appear to be a valued team member. Without monitoring by the nurse manager, the results could have turned out differently. Ultimately, the Hawthorne effect influenced the project data by skewing the results.

Another limitation of the project was the inability of the learner to conduct observations and more face-to-face meetings with the nurses and managers. Again, COVID-19 caused the organization to enact stricter in-person visit rules, making it more difficult to monitor progress or barriers to the implementation. Many meetings between the preceptor and learner occurred virtually, and in-person visits to the organization were minimal. The limitation of the learner to be available for handoff observations and continuing support could have altered the results of the project as well.

Efforts were made to minimize limitations before the project implementation. Staff received information and guidance regarding the protocol and checklist completion. While not needed, informed consent was provided to each participant to explain the project's purpose and ensure that participants were aware that their participation was optional. Staff was assured that coercion would not occur and that there would be no compensation for their participation. Additionally, after presenting the education and documents for the project implementation, the nurses were provided a 48-hour period to address any concerns with the learner or preceptor before the project began. The learner addressed questions and concerns before project implementation.

As COVID-19 cases continued to rise, the need to transfer patients during black-out times was increased during the project implementation. Black-out times could not be followed consistently during the final five weeks of the project. As inpatient beds were made available, patient transfers occurred during black-out times due to the emergency department's capacity. The resurgence of COVID-19 was a limitation that could not effectively be addressed, eliminated, or altered. Virtual meetings with the preceptor and nurse manager were held to discuss the project implementation, concerns, and barriers observed. The meetings ensured that the project implementation was running smoothly and that no revisions to the project were needed.

**Conclusions**

Standardized processes and protocols were essential to ensuring that safe patient care is provided to each patient during transfers from the ED to inpatient units. Organizations mandating standard communication processes ensure that patient safety is maintained during interdepartmental transfers (Tobiano, Ting, et al., 2020; Lee et al., 2017; Cross et al. 2018; Gu

& Itoh, 2020; Hermanson et al., 2020; Naour, 2018; Potts et al., 2018; Soo-Hoon et al., 2016; Tobiano, Bucknall, et al., 2018). Using multiple evidence-based practices to enhance the transfer process ensures that continuity of care is maintained, and patient safety is the priority. The project was beneficial in promoting patient safety, as there were no recorded adverse events after transfer to the medical-surgical unit from the ED. The work also proved helpful in determining how effective a standardized transfer process would promote patient safety, improved processes, and teamwork in the organization. However, a barrier to full implementation of the project was increased time constraints due to an influx of patients. Often, barriers to project implementation included time constraints placed on nurses by patient flow barriers or excesses (Winasti et al., 2018).

The quality improvement project was developed to provide a standardized communication process and movement of patients from the ED to the medical-surgical unit. The checklist was developed to identify critical steps of the protocol that should be followed with each patient transfer. While the project did not definitively conclude that the addition of a transfer protocol would prevent patient harm, it did support the hypothesis that a transfer protocol reduced adverse patient events.

The project could be easily sustained between the medical-surgical unit and the ED and expanded to include other units. Further study is needed to determine if the protocol would be successful in the organization long-term. Incorporating the electronic SBAR and EWS scores into one screen in the electronic medical record would streamline the reporting process between the ED and medical-surgical units. Further research is needed to determine the effectiveness of an electronic reporting tool during patient transfers. The project was designed to be easily expanded to include other units, such as the intensive care unit, to

promote patient safety, as the intensive care unit also accepts transfers from the ED. Due to the smaller sample size of patients, the project should be expanded to include other units to gather more conclusive data on the protocol's success in the future. Additionally, the the project could be disseminated to all hospitals in the academic teaching organization and studied on a much larger scale. Larger sample sizes could produce more substantial connections between the protocol and patient safety.

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## Appendix A

## SBAR template

| | | |
|---|---|---|
| S | Situation: What is the situation you are calling about?<br>• Identify self, unit, patient, room number.<br>• Briefly state the problem, what is it, when it happened or started, and how severe. | |
| B | Background: Pertinent background information related to the situation could include the following:<br>• The admitting diagnosis and date of admission<br>• List of current medications, allergies, IV fluids, and labs<br>• Most recent vital signs<br>• Lab results: provide the date and time test was done and results of previous tests for comparison<br>• Other clinical information<br>• Code status | |
| A | Assessment: What is the nurse's assessment of the situation?<br><br>PROTOCOL ADDITION - What is the EWS total? | |
| R | Recommendation: What is the nurse's recommendation or what does he/she want? Examples:<br>• Notification that patient has been admitted<br>• Patient needs to be seen now<br>• Order change | |

Institute for Healthcare Improvement · ihi.org | This SBAR tool was developed by Kaiser Permanente.

Please feel free to use and reproduce these materials in the spirit of patient safety,

and please retain this footer in the spirit of appropriate recognition.

# Appendix B

## Early Warning Score

| Score | 3 | 2 | 1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| Respiratory rate (breaths/min) | >35 | 31-35 | 21-30 | 9-20 | | | <7 |
| SpO2 (%) | <85 | 85-89 | 90-92 | >92 | | | |
| Temperature (C) | | >38.9 | 38-38.9 | 36-37.9 | 35-35.9 | 34-34.9 | <34 |
| Systolic BP (mmHg) | | >199 | | 100-199 | 80-99 | 70-79 | <70 |
| Heart rate (bpm) | >129 | 110-129 | 100-109 | 50-99 | 40-49 | 30-39 | <30 |
| AVPU | | | | Alert | Verbal | Pain | Unresponsive |

A score of five or more is statistically linked to increased likelihood of death or admission to a higher level of care.

TOTAL SCORE: _____

Current EWS Score used at organization

# Appendix C

# Handoff CEX

## Mini-Clinical Evaluation Exercise (CEX)

**Trainee's surname:** ..... **Trainee's first name:** .....

**Training Site:** ☐ FMC/other ☐ PRCC ☐ NT **Practice or Hospital:** .....

**Discipline area:** ☐ Medicine ☐ Surgery ☐ O&G ☐ Paediatrics ☐ Psychiatry ☐ Gen Practice

**Clinical setting:** ☐ Clinic ☐ Emergency ☐ Ward ☐ Theatre ☐ Other: .....

**Clinical problem:** .....

**Consultation type:** ☐ New ☐ Follow up **Case complexity:** ☐ Low ☐ Average ☐ High

**Focus of clinical encounter:** ☐ History ☐ examination ☐ Diagnosis ☐ Management ☐ Explanation

**Assessor's position:** ☐ GP ☐ GP Faculty member ☐ Specialist ☐ Other (please specify): .....

| **Please grade (tick) the following areas using the 0 - 7rating scale:** | Below expectations for level of training | | | Borderline for level of training | Meets expectations for level of training | Above expectations for level of training | | | U/C* |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| History taking | | | | | | | | | |
| Examination Skills | | | | | | | | | |
| Communication Skills | | | | | | | | | |
| Clinical Judgment | | | | | | | | | |
| Professionalism | | | | | | | | | |
| Organisation/Efficiency | | | | | | | | | |
| Overall Competence | | | | | | | | | |

**U/C Please mark this if you have not observed the behaviour and therefore feel unable to comment.*

| **Anything especially good?** | **Suggestions for development:** |
|---|---|
| **Agreed action:** | |

**Student satisfaction with Mini-CEX** 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

**Student's signature:** ..... **Student's surname:** ..... **Date**: ...../...../.....

.....

**Assessor satisfaction with Mini-CEX** 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

Have you had training in the use of this assessment tool? ☐No ☐Yes

Type? Written Training ☐ Face to face ☐ Web/CD ROM ☐

**Time taken to do Mini-CEX:**
Observation (in minutes): .....
Feedback (in minutes):.....

**Assessor's signature:** ..... **Assessor's surname:** ..... **Date**: ...../...../.....

**For verification:** **Assessor contact:** (phone or pager) .....

*Please return to the Flinders University Medical School Administration Unit at your site* *PTO*

Document your observations using the Mini-CEX Direct Observation Tool (pdf), which can also be distributed for demonstration during faculty workshops, staff meetings, orientation and training sessions. Note that paper copies of the Mini-CEX are no longer available from ABIM.

## Appendix D

## Transfer protocol checklist

Transfer Protocol Checklist

Notification time of transfer: _____

Was an SBAR with EWS report provided? Yes ☐ No ☐

Was reported provided face-to-face or verbally? Yes ☐ No ☐

Was a patient assessment completed at transfer? Yes ☐ No ☐

Transfer completion time: _____

Total Points: _____

*Scoring:

One point will be provided for each 'yes' and zero points for each 'no'.

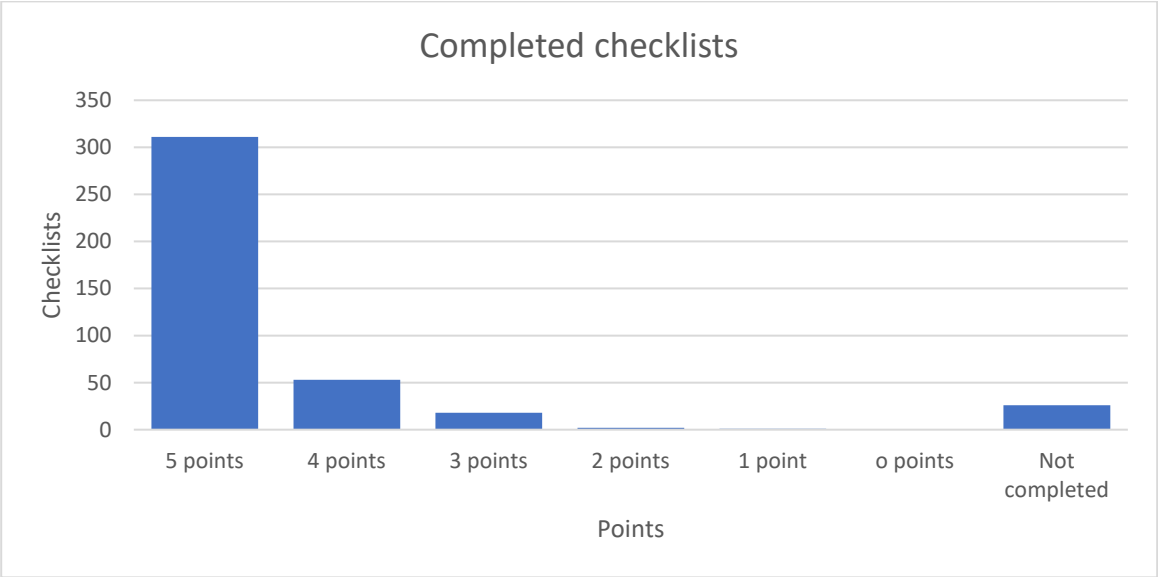
Transfer times will be awarded one point if completed and zero points if blank or occur during a blackout time.

Total of five points = 100% compliance

# Appendix E

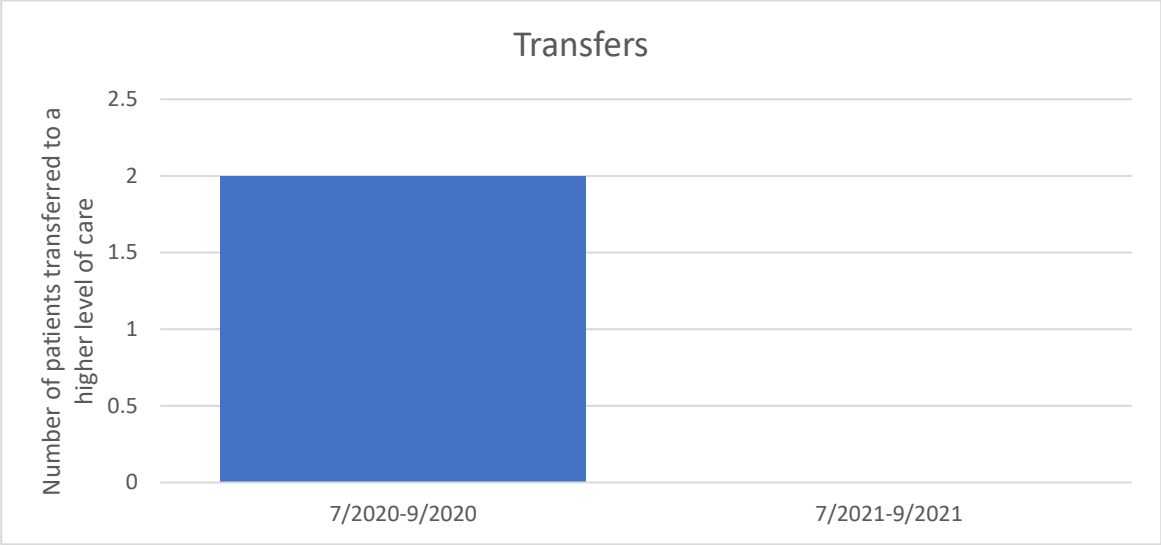
## Graphs and charts

Figure E1




Completed checklists by points

Figure E2




Transfers pre-intervention and post-intervention

Table E1

| **Checklist criteria** | **Total** |
|---|---|
| Early warning score not provided | 51 |
| Transfer during blackout times | 26 |
| Bedside or verbal report not provided | 11 |
| Patient assessment not completed at transfer | 8 |
| **Total** | **96** |

Checklist completion by category

Table E2

| **Possible points on checklist** | **Number of checklists** |
|---|---|
| Five points | 310 |
| Four points | 53 |
| Three points | 18 |
| Two points | 2 |
| One point | 1 |
| **Total** | **384** |

Checklist totals

Table E3

| **Reporting quarter** | **Admissions from ED to medical-surgical unit** | **Transfers to higher level of care** |
|---|---|---|
| July 2020-September 2020 | 345 | 2 |
| July 2021-September 2021 | 411 | 0 |

Admissions and transfers

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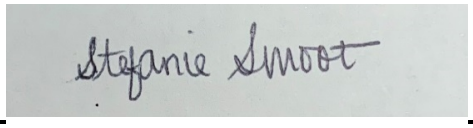
**REQUIRED Author's signature**  **Date** **10/13/21**