

Fall 2022

A Bedside Handoff Tool to Enhance Fall Safety Measures in the Emergency Department

Isha Adora Godbold
University of South Carolina

Follow this and additional works at: https://scholarcommons.sc.edu/dnp_projects



Part of the [Nursing Commons](#)

Recommended Citation

Godbold, Isha Adora, "A Bedside Handoff Tool to Enhance Fall Safety Measures in the Emergency Department" (2022). *Doctor of Nursing Practice Scholarly Projects*. 19.
https://scholarcommons.sc.edu/dnp_projects/19

This Scholarly Project is brought to you by the Nursing, College of at Scholar Commons. It has been accepted for inclusion in Doctor of Nursing Practice Scholarly Projects by an authorized administrator of Scholar Commons. For more information, please contact digres@mailbox.sc.edu.

A Bedside Handoff Tool to Enhance Fall Safety Measures in the Emergency Department

By

Isha Adora Godbold

Bachelor of Science in Nursing
Gardner- Webb University, 2018

Associate of Science in Nursing
Gardner- Webb University, 2017

Submitted in Partial Fulfillment of the Requirements

For the Degree of Doctor of Nursing Practice in

College of Nursing

University of South Carolina

2022

Accepted by:

Dr. Dwayne Alleyne, Committee Chair

Dr. Amy Dievendorf, Committee Member

Helen Flicek, Committee Member

Abstract

Problem Statement: The Emergency Department (ED) is a fast-paced environment where the risk of communication failure enhances due to the variation in patient acuity, variety of shift options, and constant interruptions (White- Trevino & Dearmon, 2018). Ineffective communication can lead to increased adverse events, medical errors, and poorer patient health outcomes (Campbell & Dontje, 2019). Additionally, medical errors, such as falls, are more likely to occur during handoff when nurses change shifts (Campbell & Dontje, 2019). The most reoccurring medical error in the ED is patient falls.

Purpose: This quality improvement project aims to introduce a structured handoff rounding tool, I-PASS, within a level one trauma ED in the southeastern United States. Improving communication and heightening situational awareness of fall precautions during bedside reports may reduce patient falls, thus increasing patient safety.

Methods: The I-PASS communication handoff tool was implemented amongst nurses within an adult ED for three months. Participants' adherence to I-PASS and the number of patient falls were measured after educational sessions.

Inclusion Criteria: Registered nurses in the adult ED

Exclusion Criteria: Travel nurses, float nurses, temporary nurses

Analysis: The result of the two-tailed paired samples *t*-test was not significant based on an alpha value of .05, $t(2) = -0.09$, $p = .933$. Findings suggest the difference in the mean of pre-intervention total falls in 2021 and the mean of post-intervention total falls in 2022 was not significantly different from zero.

Implications for practice: Implementing a handoff communication tool at the bedside amongst nurses during shift change will improve communication and assist in identifying those at higher risk for falls. As a result, it may lead to a decrease in falls.

Background

Ineffective communication is the leading cause of preventable medical errors (Campbell & Dontje, 2019). Healthcare organizations should consider patient safety and high-quality care as a priority. Many organizations recognize that a critical factor of patient safety is thorough communication between nurses during a change of shift, also known as handoff (Campbell & Dontje, 2019). Maintaining patient safety is challenging regarding falls in the emergency department (ED) (Pop et al., 2020).

According to the Joint Commission Center for Transforming Healthcare (2021), a successful handoff is defined as transferring patient care responsibility through effective communication from one provider of care to another. The nationally recognized organization also acknowledged ineffective communication as a primary factor in adverse events and realized this is a vital safety issue in healthcare (Joint Commission Center for Transforming Healthcare, 2014). Multiple studies have shown that effective handover communication reduces falls, and ineffective communication is linked to poor patient outcomes and adverse events (Campbell & Donteje, 2019; Hada & Coyer, 2021; Mardis et al., 2016; & McAllen et al., 2018). The Emergency Department (ED) is a unique environment with complex patient populations (Stoeckle et al., 2019). Handoff report, also known as shift report, is an interchangeable term commonly used in healthcare to describe the exchange of patient information between the off-going and on-coming provider. Handoff is a high-risk timeframe for medical errors to occur in the ED (Campbell & Dontje, 2019). Joint Commission estimates that 80% of serious medical errors are linked to miscommunication during handoff (Joint Commission Center for Transforming Healthcare, 2014). Commonly known medical errors within the ED consist of medication administration, blood administration, lack of infection control, and falls (Campbell & Dontje, 2019). Ineffective communication increases the risk of adverse events, such as falls (Joint Commission Center for Transforming Healthcare, 2021). Falls are the second leading cause of unintentional injury deaths worldwide (World Health Organization, 2021). Falls cost \$31 billion annually in medical costs, leading to

a delay in a patient's healing process (McCarty et al., 2018). The Joint Commission considers injuries related to falls a high priority (McCarty et al., 2018). When patient safety is compromised by a fall, the result is often the use of additional resources, unplanned hospitalization, and poor patient outcomes (Pop, 2020). Effective communication is crucial when exchanging patient information (White- Trevino & Dearmon, 2018). Structured communication is especially needed in hospital departments such as the ED, where the nature is dynamic.

37.3 million falls are severe enough to require medical attention yearly (World Health Organization, 2021). Six hundred eighty-four thousand people die from falls globally (World Health Organization, 2021). In the United States, 11,000 fatal falls occur in the hospital annually (Joint Commission Center for Transforming Healthcare, 2021). According to the Joint Commission Center for Transforming Healthcare (2021), falls delay healing, cause increased hospital length of stay, inflict patient harm, and increase costs.

Problem Statement

The risk for potential falls that result in injury or death is increased in the ED, due to a crowded, fast-paced environment, that consists of a high-acuity and complex patient population. The ED has the highest fall rates of any other hospital department (Stoeckle, 2019; Pop, 2020). Falls are considered a medical error, and the most reoccurring medical error in the ED is patient falls (Campbell & Dontje, 2019). Additionally, medical errors are more likely to occur during handoff when nurses change shifts (Campbell & Dontje, 2019).

Relevance to Clinical Setting

In 2021, 72,084 patients were evaluated and treated at the busiest level-one trauma emergency department in the Southeastern region, the location for this project (H. Flicek, personal communication, September 9, 2022). In the first five months of 2021, 72 patient falls were reported, with an additional

26 resulting in injury (S. Allen, personal communication, May 27, 2021). An injury-related fall is defined as a fall that results in fractures, lacerations, or internal bleeding (Agency for Healthcare Research and Quality, 2021). The annual target goal for falls in the ED in 2021 was 45, and less than ten injury-related falls.

Currently, a structured handoff communication tool does not exist in the ED to address pertinent information, such as patients at high risk of falls. The current process for handoff communication in the ED is verbal communication at the nurses' station, where the decision of what is considered pertinent information is left at the discretion of the nurse giving the report (S. Allen, personal communication, May 27, 2021). This ED's physical design is unsuitable for staff to reinforce fall precautions, as patient rooms are far away from the nurse's station. Emergency nurses are vital in communicating, implementing, and maintaining fall precautions for at-risk individuals through effective communication (Stoeckle, 2019). When ineffective communication occurs, the impact can result in poor quality of care, medical errors, and adverse events (Campbell & Dontje, 2019). Implementing a structured handoff tool at the bedside in the ED can improve patient safety by identifying high-risk patients and reducing adverse events (Shahian, 2017). This led to the clinical question: Among adult patients in the ED, what is the effect of the I-PASS handoff communication tool given at the bedside, compared to usual practice, on the number of patients who fall over a 3-month time frame?

Review of Literature

A literature review was conducted to fuse evidence to support the proposed intervention. Databases searched included PubMed, CINAHL, and Joanna Briggs Institute. All three databases were most beneficial based on the articles extending up to the present time, relevancy, and the most article return.

The specific keywords used within the search were “hospital falls,” “emergency department,” and “fall reduction.” Additional terms included “handoff communication tool” and “bedside shift report.” Two hundred forty-eight articles were identified through database searching. One hundred nine articles were excluded after search limits were applied to articles not published within the past five years. Eighty-eight articles were excluded because they did not address the specific clinical question. Fifty-one full-text articles were then assessed for relevancy. 70% of those articles identified several handoff communication tools used in various hospital settings that improved patient safety; however, only one handoff communication tool met the ideal criteria of reducing patient falls in the ED. Fifteen good to high-quality articles that showed consistent results were chosen and included in the evidence table (see *Appendix A*). These articles were chosen because they showed reduced fall rates when a handoff report was used. During the in-depth literature review, articles were selected based on two themes identified in the evidence: bedside shift reports improving patient outcomes and the I-PASS handoff communication tool.

In the ED, a shift report is typically conducted at the nurse's station. Recent research linked bedside shift reports (BSR) displaying a positive impact on falls with nurse regularity during BSR (Sun et al., 2020) and reduced fall rates (Agency for Healthcare Research and Quality, 2017 & McAllen et al., 2018). Research indicates that BSR increases safety protocol and improves reliability, quality, and satisfaction among nurses, patients, and families (Agency for Healthcare Research and Quality, 2017; Campbell & Donteje, 2019; Hada & Coyer, 2021; Mardis et al., 2015; Mardis et al., 2016; McAllen et al., 2018; White- Trevino & Dearmon, 2018).

A standardized handoff tool provides structure when patient information is being relayed from one nurse to another. The World Health Organization believes that establishing standardized policies is a crucial strategy to fall prevention (2021). I-PASS is one of many structured handoff tools that is utilized and consists of five quality components: Illness severity (I), patient summary (P), action list (A),

situational awareness and contingency plans (S), and synthesis by the receiver (S) (Blazin et al., 2020). It is a validated and structured handoff tool established from a multicenter study at Boston Children's Hospital (Starmer et al., 2017). Unlike any other structured handoff tool, I-PASS has effectively reduced falls, improved safety and quality, and shown flexibility across multiple disciplines (Blazin et al., 2020; Shahian et al., 2017; & Starmer et al., 2017). I-PASS is structured to provide effective communication, emphasizing closed-loop communication (Starmer et al., 2017). Implementing I-PASS at the bedside during shift change has substantial evidence to support the outcome of fall reduction. I-PASS will be implemented at the bedside shift for this project to reduce patient falls.

Theoretical Framework

The Lean Transformation Framework will serve as a guide for this quality improvement project. The Lean Transformation Framework methodology consistently addresses fundamental questions that encompass purpose, process, and people to close the gap to solve the issue (Lean Enterprise Institute, 2021). Similar to I-PASS, the Lean Transformation Framework molds and evolves in the context of specific situations. The framework takes a situational approach, recognizing that every situation and countermeasure is different. Lean consists of five core elements: situational approach, process improvement, capability development, responsible leadership, and basic thinking, mindset, and underlying assumptions (Lean Enterprise Institute, 2021). These primary elements were used in this DNP project. The situational approach stemmed from recognizing falls as an issue of patient safety. The improvement process helped provide more effective communication to reduce falls. Capability development helped identify I-PASS as the handoff communication tool because of its flexible use across multiple disciplines to improve communication and reduce patient falls. Responsible leadership was essential to gain buy-in and support for this DNP project. Basic thinking, mindset, and underlying assumptions played a role in identifying that handoff is a critical time to communicate with patients at a high risk of falling.

Purpose, Objective, Expected Outcome

When patient information is relayed from one nurse to another, key elements such as cognitive monitoring, code status, and fall precautions should be addressed to maintain safe and consistent care. Handoff is a critical time to communicate which patient is at high- risk for falls to the next nurse assuming patient care. The purpose of this quality improvement project was to implement I-PASS, a communication handoff tool, for bedside nurses to use during a shift change in an adult ED. The objective is to reduce the number of patient falls. The expected outcome of this DNP project is to increase patient safety by decreasing patient falls in the ED while enhancing situational awareness among bedside nurses.

Project Design

The setting of this quality improvement project was a university health center. The 520-bed academic health center is located in the southeastern United States. The specific project setting occurred in the adult emergency department (ED). The ED is the busiest level-one trauma center in the region, with 72,084 patients seen last year. The 88-bed adult and children's ED comprises twelve pediatric acute care beds, two critical/ trauma pediatric beds, and seven different pods in the adult ED. Each pod or section of the adult ED consists of critical, trauma, behavioral health, acute care, fast-track, and observational beds. The population of interest for this project was patients 18 years of age and older in the ED. Since the I-PASS communication handoff tool was implemented amongst nurses, the project participants were registered nurses within the adult ED. Participants consisted of staff nurses that worked in the adult ED. Excluded from the project were temporary, travel, and float nurses. The project setting defined a temporary nurse as a nurse employed by the hospital for six months or less. A travel nurse is contracted to work for a hospital system to help with staffing through a nursing agency. Lastly, float nurses are defined by the project setting as nurses who permanently work on another unit within the hospital but are asked to float to the ED or another unit to assist with staffing needs.

Implementation Plan

Project Method/ Model

The Lean Transformation Framework guided this quality improvement (QI) project. Utilizing this framework, a standardized communication handoff tool, I-PASS, was implemented among nurses within an adult ED to evaluate the impact of falls. I-PASS stands for Illness severity (I), patient summary (P), action list (A), situational awareness and contingency plans (S), and synthesis by the receiver (S). Illness severity indicates how sick the patient is. A patient summary is an overview of what the patient came to the hospital for and any unexpected outcomes. An action list identifies any pending tasks that need to be completed by the nurse assuming the patient's care. Situational awareness and contingency planning state what might be happening with the patient diagnosis-wise, precautions to be aware of, and what to anticipate. Synthesis by the receiver reinforces closed-loop communication by the nurse assuming the patient's care, restating what they heard, and asking any questions they may have (See Figure 1). The patient summary, to-do list, what was done, potential plan, and summary of the handoff report by the receiver are elements within I-PASS that strengthen communication. Although the elements of I-PASS address pertinent patient information, the contents within I-PASS are vague because they are intended to be flexible and tailored across multiple disciplines. For this DNP project, a modified version of I-PASS was introduced to fill in gaps within the project setting regarding falls (See Figure 2).

Figure 1
Original Version of I-PASS



I	Illness Severity	<ul style="list-style-type: none"> • Stable, “watcher,” unstable
P	Patient Summary	<ul style="list-style-type: none"> • Summary statement • Events leading up to admission • Hospital course • Ongoing assessment • Plan
A	Action List	<ul style="list-style-type: none"> • To do list • Time line and ownership
S	Situation Awareness and Contingency Planning	<ul style="list-style-type: none"> • Know what’s going on • Plan for what might happen
S	Synthesis by Receiver	<ul style="list-style-type: none"> • Receiver summarizes what was heard • Asks questions • Restates key action/to do items

Figure 2
Modified Version of I-PASS

I	Illness Severity	Patient identify as: <ul style="list-style-type: none"> • Fall, seizure, bleeding precautions, Stable, “watcher”, unstable • Cognitive status, • Code status,
P	Patient Summary	Describe: <ul style="list-style-type: none"> • a chief complaint, • Events leading up to admission • Mode of Arrival • Specialty Consult
A	Action List	Reported: <ul style="list-style-type: none"> • What has been completed • To Do list
S	Situation Awareness & Contingency Planning	Identified: <ul style="list-style-type: none"> • Admitted or Discharge
S	Synthesis by Receiver	Receiver summarized: <ul style="list-style-type: none"> • What was heard • Restates to do list based on priority • Questions asked

The ED consists of various patients with varying acuities and diagnoses, so I-PASS was modified for this project to accommodate these differences. Under illness severity, types of precautions such as fall, seizure, and bleeding precautions were added, as well as identification of code status and cognitive status. These additions were included to make the nurses aware of the clinical picture of each patient. Mode of arrival was included in the patient summary to improve the workflow by making nurses aware of whether an Emergency Medical Services (EMS) ride needs to be made for the patient to return home before discharge. Addressing whether the patient will be admitted or discharged was included in the situation awareness and contingency planning as another way to improve the workflow process. I-PASS

aims to help develop a shared mental model of each patient so that everyone involved in the patient's care can make decisions aligned with the overall goals (Blazin et al., 2020). If the project aims are achieved, clinical practice will be advanced with a reduction in patient falls.

Implementation Steps

For this DNP project, I-PASS was implemented over three months, from March 22nd, 2022, to June 22nd, 2022. The number of patient falls in the adult ED is being compared to the year prior during the same time frame to determine if I-PASS reduces falls. Institutional Review Board (IRB) approval was obtained through the hospital and participation was voluntary. Participants were given one month to complete I-PASS education training. The DNP student developed the PowerPoint that included the importance of the I-PASS and how to use it. The PowerPoint was shared with all nurses who chose to participate, and the completion of every participant was tracked through the hospital's online education portal, which participants could complete at their leisure. Additional education, such as small and large group active engagement education, also known as in-services, was held. The six small groups of in-services ranged from 6-8 participants, and one sizeable in-service consisting of 24 participants was held to reinforce and promote I-PASS. In-services included further education regarding the ED fall rates and how I-PASS can help identify who is at high risk for falls through role-play scenarios.

During the first week of implementation, the DNP student made announcements about I-PASS usage twice daily at 6:45 am and 6:45 pm before nurses started their shifts. Role-play scenarios were also developed by the DNP student that involved two nurses acting out shift change using I-PASS to provide a model for participants to simulate. The DNP student also created badge holders and an I-PASS slogan, "I-PASS, surpassing safer care," as a reminder to use I-PASS during shift change. Flyers and posters were designed to show the elements of I-PASS and its purpose as additional reinforcement. These were displayed around the ED with the help of the ED nurse educator, Susan Allen, RN. Additional I-PASS promotion was done through email by the ED nurse manager.

A meeting with the project team consisting of Susan Allen, RN, and Rafaela Palompon, RN, was held to discuss I-PASS. The suggestion was to modify the I-PASS rubric checklist layout to put four forms on one page instead of four separate pages per shift. The nurse ratio is typically four patients to one nurse on most shifts, so this change was made for better efficiency, increased compliance, and saved paper (Figure 3). The I-PASS rubric checklist forms were placed in each of the five nursing stations in the ED. At the end of the shift change, each nurse that assumed a patient’s care would place a check mark on each form indicating that I-PASS was used, then place the forms in a locked box near the nursing station. The DNP student was responsible for measuring I-PASS completeness by picking up the forms weekly and inputting the data into an Excel spreadsheet. Progress was communicated monthly with the project and leadership team. Data prior to the intervention was compared to the interventional data using the pre-post-intervention methodology.

Figure 3
I-PASS rubric checklist tool

Room #- Date- I-Illness Severity: Precautions: fall, seizure, bleeding, sepsis, isolation Code status Cognitive status P-Patient Summary: Chief complaint Events leading up to admission Ongoing assessments: vital signs, pain, wounds, consults etc. A-Action List: Interventions completed To-do list/ pending tasks Situational Awareness: Scan room Disposition/Admitting Service Stable, unstable, "sitter" S-Summary: Oncoming nurse→ summarizes: Plan of care Restates key actions/Questions?	Room #- Date- I-Illness Severity: Precautions: fall, seizure, bleeding, sepsis, isolation Code status Cognitive status P-Patient Summary: Chief complaint Events leading up to admission Ongoing assessments: vital signs, pain, wounds, consults etc. A-Action List: Interventions completed To-do list/ pending tasks Situational Awareness: Scan room Disposition/Admitting Service Stable, unstable, "sitter" S-Summary: Oncoming nurse→ summarizes: Plan of care Restates key actions/Questions?
Room #- Date- I-Illness Severity: Precautions: fall, seizure, bleeding, sepsis, isolation Code status Cognitive status P-Patient Summary: Chief complaint Events leading up to admission Ongoing assessments: vital signs, pain, wounds, consults etc. A-Action List: Interventions completed To-do list/ pending tasks Situational Awareness: Scan room Disposition/Admitting Service Stable, unstable, "sitter" S-Summary: Oncoming nurse→ summarizes: Plan of care Restates key actions/Questions?	Room #- Date- I-Illness Severity: Precautions: fall, seizure, bleeding, sepsis, isolation Code status Cognitive status P-Patient Summary: Chief complaint Events leading up to admission Ongoing assessments: vital signs, pain, wounds, consults etc. A-Action List: Interventions completed To-do list/ pending tasks Situational Awareness: Scan room Disposition/Admitting Service Stable, unstable, "sitter" S-Summary: Oncoming nurse→ summarizes: Plan of care Restates key actions/Questions?

Measures, Tools, and Data Plan

The I-PASS rubric checklist tool was used to evaluate adherence to I-PASS. The checklist was provided daily for nurses to use during shift change and placed in a drop box when complete. The I-PASS rubric checklist form was available for participants from March 22 to June 22, 2022. Charge nurses reminded participants to complete the form before every shift at 7 am and 7 pm. The ED nurse manager also periodically included reminders in her weekly emails to all nurses.

In addition to I-PASS adherence, data was collected on the number of patient falls. Phase one was from March 22 to April 22. Phase two was from April 23 to May 22. Phase three was from May 23 to June 22nd. Every month during the implementation phase, the DNP student evaluated the number of falls in the ED. Falls with and without injury were measured, as falls with injury cause patient harm and increase the length of stay and cost. The target goal for this DNP project is to have less than three falls per month and no falls with injury. Upon data retrieval from the clinical outcomes manager and measuring compliance to I-PASS, the DNP student relayed monthly information to the project, leadership team, and the hospital organization. To ensure the plan was working, and thorough communication was supported, the plan was reviewed monthly with the project team.

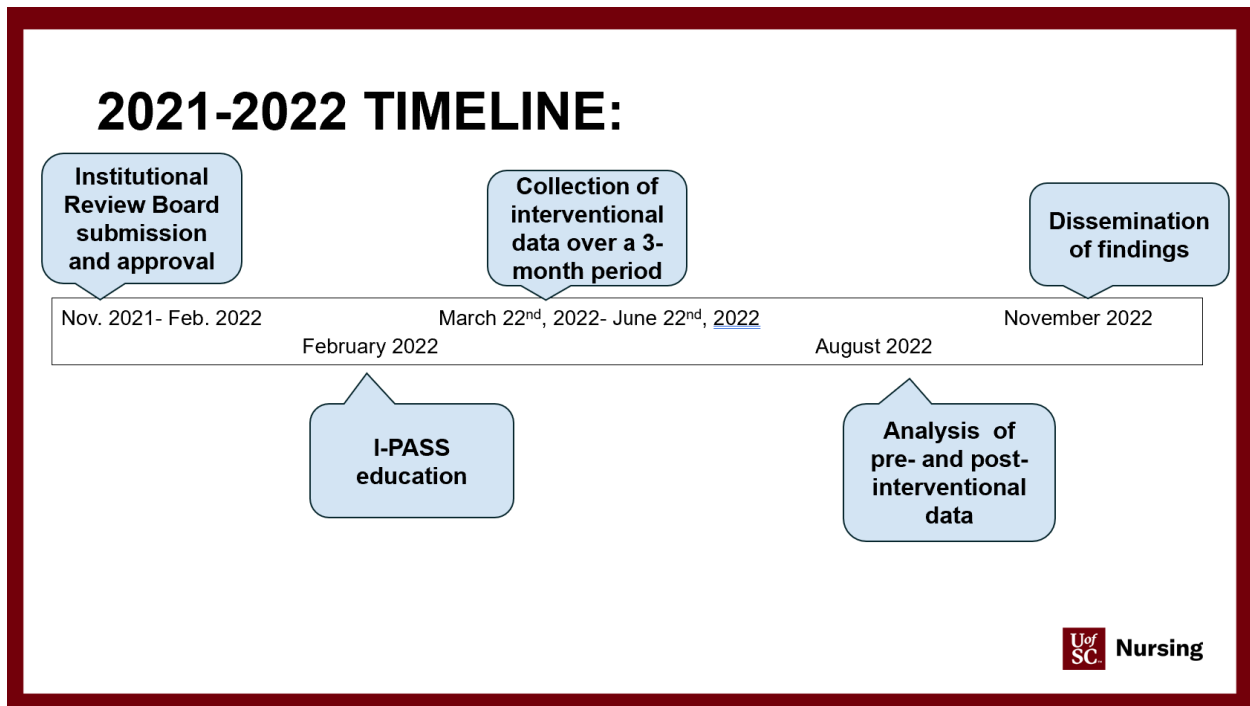
I-PASS's outcome on the number of patient falls in the ED was evaluated using the quantitative methodology of pre-post intervention. A paired *t*-test was chosen to analyze if mean differences exist between the number of falls before applying I-PASS compared to the interventional data. A paired *t*-test is an appropriate statistical analysis because it can measure the effect I-PASS has on the number of patients who fall over three months. Descriptive statistical analysis, including variance and measures of central tendency, was used to assess the completeness of I-PASS by measuring adherence.

Timeline

After an institutional defense proposal in November 2021, Institutional Review Board (IRB) approval was obtained in February 2022, and was deemed exempt since it was a quality improvement

project. Educational training modules were assigned to participants to complete online from February 2022 to March 2022. A week before I-PASS began, the I-PASS rubric checklist form was modified to make I-PASS easier to incorporate into the nursing workflow. I-PASS began at the end of March 2022 and concluded in June 2022. Interventional data, including I-PASS usage and the number of patient falls, was obtained over the three months. Statistical analysis of results was conducted in August of 2022 (Figure 4).

Figure 4
Timeline



Budget Requirements

There was no budget assigned for this DNP project. The ED budget absorbed direct costs and indirect costs contributing to the project. An estimated cost of \$3,000 factors in the cost of paper, printing costs, and the hourly rate of nurses who completed online educational training.

Protection of Human Subjects

IRB was approved and deemed exempt before starting this quality improvement project. Participation in the DNP project was voluntary, and no action was implemented if a participant chose not to participate. Data regarding falls were stored within a password-protected informatics system. To address participants' and patients' privacy and safety concerns, I-PASS checklists were stored in a protected drop box without patient or staff identifiers.

Results

Over 3 months from March 22 to June 22, 2022, I-PASS was implemented within the ED to identify if a unit-specific structured handoff communication tool reduced the number of patient falls. As mentioned, data was collected in approximately 30-day time frames in three phases. At the time of implementation, 46 out of 97 nurses (47%) volunteered to use I-PASS during shift change. By the project's end, 4 out of 97 nurses (0.04%) were using I-PASS during shift change.

Summary statistics were calculated for each interval and ratio variable (Table 1). Frequencies and percentages were calculated for each phase that I-PASS was used. *N* represents the total number of times I-PASS was used each month. *T* represents the total number of times I-PASS was used in all phases. The most frequently observed category of I-PASS months was phase 1 ($n = 119, 96.75\%$). The least frequently observed category was phase 2 ($n = 0, 0\%$). During phase 2, several ED nursing staff who were study participants left the ED. Also, during that phase, the creation of temporary nurses and increased travel nurses and float nurses from other units. After phase 2, a meeting was held with the leadership team to reinforce I-PASS use with the remaining participants. As a result, phase 3 showed an increase in I-PASS usage ($n = 4, 3.25\%$).

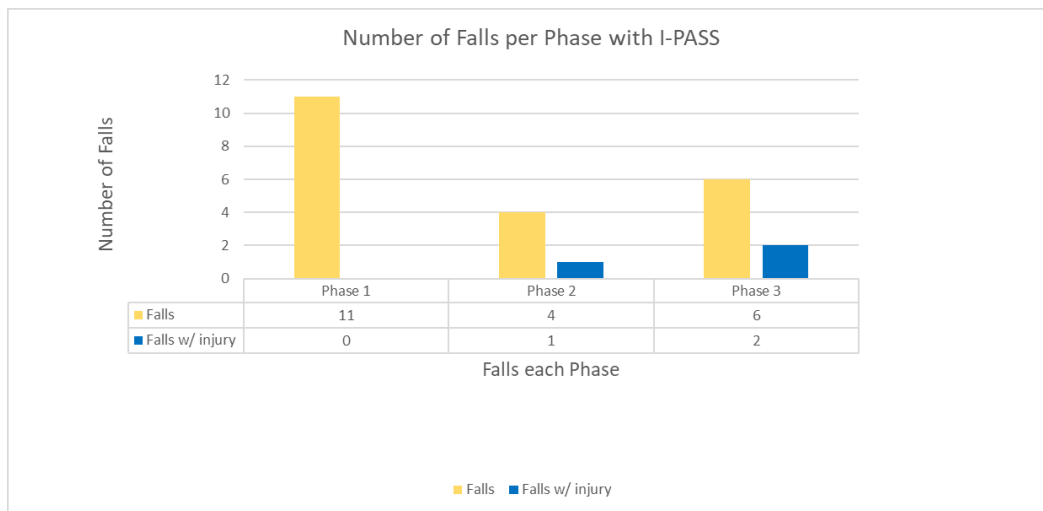
Table 1

Frequency Table for I-PASS Usage

<i>Date of Data Collection</i>	<i>n</i>	<i>IPASS usage</i>	<i>Total Falls</i>	<i>Falls with Injury</i>
Phase 1	46	119	11	0
Phase 2	10	0	4	1
Phase 3	2	4	6	2

Falls with and without injury were also calculated, as falls with injury cause patient harm and increase the length of stay and cost (Figure 5). Phase one had the highest number of falls (n=11) and the lowest number of falls with injury (n=0) when the frequency of I-PASS was the highest (n = 119, 96.75%). There were four falls and one with injury in phase two when I-PASS was not used. Phase three had six falls and two falls with injuries.

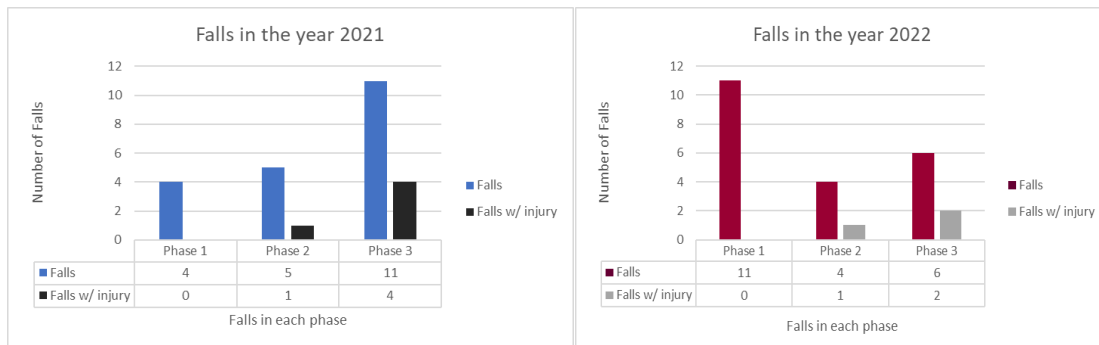
Figure 5
Number of falls in 2022



A correlation was noted between I-PASS usage and the number of falls with and without injuries per phase. In phase one where I-PASS usage was the highest, there were also the highest reported falls. There were no falls with injury when I-PASS was used the most. Alternatively, when I-PASS was not used in phase two, there was one fall with injury, and the total number of falls was the lowest (n=4). Findings suggest that I-PASS could lead to an increase in the number of patient falls.

A statistical summary was calculated to compare the number of falls and falls with injuries that occurred during this project timeline. There was an increase in falls in 2021 and a decrease in falls when I-PASS was implemented. In 2021, there were twenty reported falls and five falls with injury. In 2022, twenty-one reported falls and three injury-related falls (Figure 6).

Figure 6
Number of Falls per Month in 2021 vs. 2022 over Three Months



A two-tailed paired sample *t*-test was conducted to examine whether the mean difference between pre-intervention total falls in 2021 and post-intervention total falls in 2022 significantly differed from zero. The result of the two-tailed paired sample *t*-test was not significant based on an alpha value of .05, $t(2) = -0.09$, $p = .933$, indicating that the null hypothesis cannot be rejected. This finding suggests that the difference in the mean of pre-intervention total falls in 2021 and the mean of post-intervention total falls in 2022 was not significantly different from zero. The results are presented in Table 2.

Table 2
Two-Tailed Paired Sample t-Test of Pre-Intervention and Post-Intervention Total Falls

Pre-Intervention Total Falls		Post-Intervention Total Falls		<i>t</i>	<i>p</i>	<i>d</i>
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
6.67	3.79	7.00	3.61	-0.09	.933	0.05

Note. N = 3. Degrees of Freedom for the *t*-statistic = 2. *d* represents Cohen's *d*.

Study Limitations

Several elements were identified that had an impact on the project. Participant adherence was essential to the project's outcome, as a small sample skews the results. Initially, there were 46 out of 97 participants (47%), but towards the end of phase 1, there was an unexpected change in the number of ED nursing staff. A reduction in ED staff nurses, an increase in travel nurses, and the creation of temporary and float nurses throughout the interventional timeframe resulted in an increasing gap in I-PASS education, compliance, and participation. Throughout the project, bed availability was limited throughout the hospital resulting in an overflow of bed holds in the ED. The project setting defines bed hold as any patient in the ED waiting until a hospital bed becomes available on another unit in the hospital. This also may have contributed to the reduction in I-PASS usage, as I-PASS was modified to be specific to the ED. Another limitation was that falls could have been associated with someone that did not receive I-PASS education, as this was not measured. Lastly, voluntary versus mandatory participation and loss in buy-in over time from leadership limited the outcome of this project.

Study Strengths

Since buy-in and support from the facility were attained, the I-PASS education PowerPoint was placed on the hospital's learning management system for all nurses, which inclined more participation. The advantage of using the online system is that it allows easy access at any time for a flexible learning environment. There was a high I-PASS usage rate in phase 1, with 47% of nurses using I-PASS. Additionally, the project went according to plan, with no delays or setbacks occurring during the project. Despite I-PASS not significantly impacting the number of falls, it was identified that falls were a huge issue. As a result, fall precaution supply cabinets were established on every pod in the adult ED by the fall committee a month after I-PASS concluded. Each cabinet

was stocked with fall risk bracelets, bed alarms, non-skid socks, and directions with corresponding forms to fill out if a patient falls.

Discussion

The number of reported falls was highest in phase 1 when I-PASS was used the most; therefore, findings suggest that I-PASS could lead to increased patient falls. In phase 2, I-PASS usage was 0%. During that phase, several ED nursing staff left the ED. Consequently, so did the study participants, leaving ten remaining. Of the ten remaining participants, participation declined for a few reasons. The I-PASS content checklist form may have been difficult to understand, leaving some participants thinking that they had to fill out everything on the form instead of using it as a guide and placing a checkmark in the corner once completed. Some participants said they used the form throughout their shift and forgot to turn it in. Some may not have found it helpful to their workflow and stopped using it. Some may not have continued to use it because participation was not required, and buy-in from leadership declined due to other concerns that took priority.

Falls with injury were measured. Overall, there were fewer falls with injury compared to the prior year, suggesting that I-PASS could reduce falls with injury. Lastly, the mean difference between total falls in 2021 and 2022 was not significantly different from zero, indicating that more studies are needed to explore the impact I-PASS has on falls in the ED when limitations or barriers are addressed.

Conclusion

I-PASS was modified to use in the ED to reduce the number of patient falls. More studies are needed to explore the impact I-PASS has on falls in the ED. With the stressful nature of the ED and voluntary participation, it is hard to say if falls were associated with those that used I-PASS or not. Future studies could focus on the impact of the I-PASS on medical errors, such as medication errors,

using the original version of I-PASS. Although I-PASS did not show a reduction in the number of falls, it helped aid future studies, and fall precaution supply cabinets were incorporated in each nursing station in the ED. The operations committee has requested that this project's results be presented with the intent of mandating a structured handoff communication tool for nurses to use in every hospital unit in the future.

References

- Blazin, L. J., Sitthi-Amorn, J., Hoffman, J. M., & Burlison, J. D. (2020). Improving patient handoffs and transitions through adaptation and implementation of i-pass across multiple handoff settings. *Pediatric Quality and Safety*, 5(4). <http://doi.org/10.1097/pq9.0000000000000323>
- Campbell, D., Dontje, K. (2019). Implementing bedside handoff in the emergency department: A practice improvement project. *Journal of Emergency Nursing*, 45(2), p. 149-154.
<http://doi.org/10.1016/j.jen.2018.09.007>
- Hada, A., Coyer, F. (2021). Shift-to-shift nursing handover interventions associated with improved inpatient outcomes-Falls, pressure injuries and medication administration errors: An integrative review. *Nursing & Health Sciences*. <https://doi.org/10.1111/nhs.12825>
- Intellectus Statistics [Online computer software]. (2022). *Intellectus Statistics*.
<https://analyze.intellectusstatistics.com/>
- Joint Commission Center for Transforming Healthcare. (2014). *Targeted Solutions Tool (TST) Hand-off Communications*. <https://www.jointcommission.org/-/media/cth/documents/what-we-offer/hand-off-communication-tst-fact-sheet-8-15.pdf>
- Lean Enterprise Institute. (2021, January). *What is Lean*. <https://www.lean.org/whatslean/>
- Mardis, M., Davis, J., Benningfield, B., Elliot, C., Youngstrom, M., Nelson, B., Justice, E. M., & Riesenber, L. A. (2015). Shift-to-shift handoff effects on patient safety and outcomes: A systematic review. *American Journal of Medical Quality*, 32(1), p. 34-42.
<https://doi.org/10.1177/1062860615612923>
- Mardis, T., Mardis, M., Davis, J., Justice, E. M., Holdinsky, S. R., Donnelly, J., Ragozine- Bush, H., & Riesenber, L. A. (2016). Bedside Shift-to-shift handoffs a systematic review of the literature.

- Journal of Nursing Care Quality*, 31(1), p. 54-60.
<http://doi.org/10.1097/NCQ.000000000000142>
- McAllen, E. R., Stephens, K., Swanson-Bearman, B., Kerr, K., & Whiteman, K. (2018.) Moving shift report to the bedside: An evidence- based quality improvement project. *The Online Journal of Issues in Nursing*, 23(2). <https://doi.org/10.3912/OJIN.Vol23No02PPT22>
- Pop, H., Lamb, K., Livesay, S., Altman, P., Sanchez, A., & Nora, M. E. (2020). Tailoring a comprehensive bundled intervention for ED fall prevention. *Clinical Nurses Forum*, 46(2).
<http://doi.org/10.1016/j.jen.2019.11.010>
- Preventing Falls in Hospitals*. (2021, March). Agency for Healthcare Research and Quality. Retrieved October 25, 2022, from <https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html>
- Razali, N. M., & Wah, Y. B. (2011). Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. *Journal of Statistical Modeling and Analytics*, 2(1), 21-33.
- Shahian, D. M., McEachern, K., Rossi, L., Chisari, R. G., & Mort, E. (2017). Large-scale implementation of the i-pass handover system at an academic medical centre. *BMJ Quality & Safety*.
<http://doi.org/10.1136/bmjqs-2016-006195>
- Starmer, A. J., Schnock, K. O., Lyons, A., Hehn, R. S., Graham, D. A., Keohane, C., & Landrigan, C. P. (2017). Effects of the i-pass nursing handoff bundle on communication quality and workflow. *BMJ Quality & Safety*. <http://doi.org/10.1136/bmjqs2016-006224>
- Strategy 3: Nurse Bedside Shift Report*. (2017, December). Agency for Healthcare Research and Quality. Retrieved October 25, 2022, from <https://www.ahrq.gov/patient-safety/patients-families/engagingfamilies/strategy3/index.html>
- Sun, C., Fu, C. J., O'Brien, J., Cato, K. D., Stoerger, L., & Levin, A. (2020). Exploring practices of bedside shift report and hourly rounding. Is there an impact on patient falls. *JONA: The Journal of*

Nursing Administration, 50(6), p. 355- 362.

<http://doi.org/10.1097/NNA.0000000000000897>Page 33 of 15

Westfall, P. H., & Henning, K. S. S. (2013). *Texts in statistical science: Understanding advanced statistical methods*. Taylor & Francis.

White- Trevino, K., & Dearmon, V. (2018). Transitioning nurse handoff to the bedside engaging staff and patients. *Nursing Administration Quarterly*, 42(3), p. 261-268.

<http://doi.org/10.1097/NAQ.0000000000000298>

World Health Organization. (2021, April 26). *Falls*. <https://www.who.int/news-room/fact-sheets/detail/falls>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>Article 1: Campbell, D., Dontje, K. (2019). Implementing bedside handoff in the emergency department: A practice improvement project. <i>Journal of Emergency Nursing</i>, 45(2), p. 149-154. http://doi.org/10.1016/j.jen.2018.09.007</p> <p>Evidence level II- Quasi- experimental meta- synthesis study</p> <p>Quality A high- Efforts to enhance the quality of data with specific techniques described. Evidence of transparency, verification, participant -driven inquiry, and insightful interpretation are noted in the study</p>	<p>Design- QI study</p> <p>Sample- convenience sample of all RNs in the emergency department</p> <p>Setting -An 85 bed Emergency department (Level 1 adult trauma/ level 2 pediatric trauma) of a Midwestern trauma center</p> <p>Framework -Lewin's Theory of Planned changed 3- step model</p> <p>Measures- Improved communication and increased awareness of handoff practices</p> <p>Analysis Plan- Pre- and post-implementation scores on a nursing handoff questionnaire, selected questions on the AHRQ hospital survey on patient safety culture, and handoff observations documented by nursing leadership using a bedside shift report checklist.</p> <p>Procedure- ED nurses were to conduct handoff at the bedside using the SBAR nursing handoff worksheet with education via inservices, simulation demonstration, and a powerpoint to enhance facilitation</p>	<p>External Validity- Weak; Results cannot be generalized to other settings, because of the lack of statistical evidence and results based on subjective data; This study has not been done in multiple locations</p> <p>Internal Validity- Fair. Observations were done 3 days/week at random to address the concern of the Hawthorne effect and consistent use of bedside handoff, but during observations the Hawthorne effect could have altered compliance</p> <p>Reliability -poor; Results are based on subjective data. The ED has multiple shifts. It was admitted that handoffs were observed during 6am-6pm, resulting in unknown nursing compliance to bedside handoff during the other shift change times.</p> <p>Precision- data collected are neither a 2- independent group nor an identifiable paired design, statistical testing could not be performed using parametric or nonparametric methods</p>	<p>Findings- The patient safety survey for 2016 had a 65% response rate of the nursing staff in the emergency department. The 2 items being reviewed for this project (F5R "important patient care information is often lost during shift change" and F11R "shift changes are problematic in this hospital") showed an improvement in scores from 2015 (pre-implementation: F5R 50%, F11R 39%) to 2016 (postimplementation: F5R 62%, F11R 47%). This was a significant improvement, as scores for these 2 questions have not been above benchmark for this emergency department since before 2012</p> <p>- All other components on the AHRQ observation checklist were met</p> <p>- The nurses' responses to item 3 ("I have had a personal incidence of a poor patient outcome related to incomplete handoff") showed 43% disagreed with this statement in the pre-implementation questionnaire versus 84% in the post-implementation questionnaire</p>	<p>Conclusions- Handoff in the emergency department is considered a high-risk period for medical errors to occur.</p> <p>-Medical errors that have been identified within the emergency department include falls, administration of medication, administration of blood, and a deficiency of infection control practices</p> <p>- Numerous organizations have identified that communication among nurses is an essential component of safe patient care, especially during handoff</p> <p>-Effective handoffs can help decrease adverse events and improve outcomes. Nurses reported that bedside handoff resulted in their being accountable to each other</p> <p>-Nurses noted that implementation of bedside handoff helped reduce the number of poor patient outcomes related to incomplete reporting.</p> <p>- Although patient feedback was not a planned component of the project, patient and family opinions on bedside handoff were randomly solicited. Some comments noted</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
			<p>- Pre-implementation, 43% of nurses agreed with the statement in item 4 ("I believe all nurses on staff provide complete and accurate handoffs") versus 77% on the post-implementation questionnaire.</p> <p>-post- implementation, 62% of nurses' preferred bedside handoff to other methods</p>	<p>were "I appreciated hearing what was happening with my care," "I liked the report at the bedside because it allowed me to ask questions regarding whether I was being admitted or not," "it was nice to know my nurse was going home and who my next nurse was going to be,"</p> <p>- When bedside handoff was being completed, both the offgoing and oncoming nurses had the opportunity to promote situational awareness by viewing the patient and surroundings, reviewing orders, and discussing the plan of care with patients and their families.</p>
<p>Article 2: Starmer, A. J., Schnock, K. O., Lyons, A., Hehn, R. S., Graham, D. A., Keohane, C., & Landrigan, C. P. (2017). Effects of the i-pass nursing handoff bundle on communication quality and workflow. <i>BMJ Quality & Safety</i>. http://doi.org/10.1136/bmjqs-2016-006224</p> <p>Evidence level II- Quasi- experimental meta- synthesis study</p>	<p>Design: prospective pre-post intervention study</p> <p>Sample: Convenience sample of ICU nurses where the I-pass framework has not previously been studied</p> <p>Setting: A 29-bed medical and surgical pediatric intensive care unit</p> <p>Framework: Kern's six-step approach</p> <p>Measures: (1) Quality of the verbal handoff, including interruption frequency and presence of key</p>	<p>External Validity- Implementation of an I-pass handoff program has not been done in multiple locations, making it unclear how generalizable findings may be to other settings</p> <p>Internal Validity- Because of the observational design, causality cannot be determined. Additionally, Hawthorne effect secondary to the presence of observers cannot be ruled out</p>	<p>Findings- associated with improvements in verbal handoff communications. Pre and post-intervention results for illness severity assessment 37% vs 67% (p=0.001), patient summary 81% vs 95% (p=0.05), to do list 35% vs 100% (p< 0.001), and opportunity for the receiving nurse to ask questions 34% vs 73% (p< 0.001)</p> <p>-Significant increase recent abnormal exam findings (49% vs 91%,</p>	<p>Conclusions- Implementing an I-PASS nursing handoff bundle is associated with widespread improvements in the verbal handoff process without a negative impact on nursing workflow</p> <p>-I-pass for nurses may have the potential to significantly reduce medical errors and improve patient safety</p> <p>-The importance of closed loop communication was</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>Quality B Good- Results and recommendations are reasonably consistent, includes some reference of scientific evidence, with fairly definitive conclusions</p>	<p>handoff data elements, (2) duration of handoff and other workflow activities Analysis Plan: Chi-square goodness of fit 2011 and 2012 to 2013 IGRA. 95% confidence P <.001 Procedure: New employee could choose IGRA (T-spot) or TST</p>	<p>entirely, even though the effect was present during pre and post intervention Reliability-It was reported that the I-pass handoff program is effective in the pediatric ICU setting, but prevented the ability to blind nurses and research assistants to the intervention period Precision- verbal handoffs included higher quality data elements without a significant change in the median duration of each patient handoff or change in nursing workflow patterns</p>	<p>p<0.001), patient weight (54% vs 76%, p<0.001), laboratory results (60% vs 100%, p<0.001), patient identifiers such as name/age, and medical record number (64% vs 88%, p=0.005), a medication list (70% vs 100%,p<0.001) and pertinent vital signs (84% vs 100%,p=0.004) - implementation was not found to be associated with any significant changes in the amount of time spent in direct (39.6% vs 40.8%, 95%CI -2.7%, 5.0%) or indirect (60.4% vs 59.2%, 95%CI -5.0%, 2.7%) patient care activities -implementation was associated with a decrease in interruption frequency pre- vs post-intervention 67% vs 40% (p=0.005). This is without a change in the median handoff duration (18.8min vs 19.9min, p=0.48) or changes in time spent in direct or indirect patient care activities - significant increases in the inclusion of key handoff data, including: the identification of the primary physician (6% vs 26%, p=0.004), parent contact information (12% vs 75%, p<0.001),</p>	<p>stressed to help nurses achieve a shared mental model - A key component of the bundle and training included standardization of the verbal handoff process using the I-PASS format that served as a standardized framework for verbal handoffs and has previously been described for use in resident physician change of shift handoffs - At baseline, 65.3% of nurse subjects perceived that inadequate training on how to hand off patient information was an important barrier to successful nursing handoffs -Although a handful of prior studies described SBAR as an organizing framework to standardize nursing handoffs of care, the mnemonic was not designed for purposes of handoff communication and lacks key data elements important for optimizing patient safety during transition of care</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
			<p>whether the patient was on isolation or medical precautions (19% vs 49%, p<0.001)</p> <p>- A total of 126 handoffs were observed (n=81preintervention, n=45postintervention)</p> <p>- significant reduction in the percentage of handoffs that had interruptions present (67% vs 40%, p=0.005)</p>	
<p>Article 3: Mardis, M., Davis, J., Benningfield, B., Elliot, C., Youngstrom, M., Nelson, B., Justice, E. M., & Riesenber, L. A. (2015). Shift-to-shift handoff effects on patient safety and outcomes: A systematic review. American Journal of Medical Quality, 32(1), p. 34-42. https://doi.org/10.1177/1062860615612923</p> <p>Evidence level III- Systematic review of a combination of RCTs, quasi- experimental, and nonexperimental studies</p> <p>Quality C low- Little evidence with inconsistent results, insufficient sample size for the study design, and definitive conclusions cannot be drawn</p>	<p>Design: Systematic review</p> <p>Sample: Purposive systematic literature search of English language articles published on handoff studies between Jan 1, 2008 and May 13, 2015, using articles focused on shift to shift inpatient handoffs in any health care discipline, quantitative or qualitative data, and specific focus on evaluation of handoff intervention with patient outcome measures</p> <p>Setting: National Library of Medicine PubMed, EBSCO CINAHL, and OvidSP All Journals databases</p> <p>Framework: not discussed</p> <p>Measures: patient falls (n=7), reportable events(n=6), length of stay (n=4), mortality (n=4), code calls (n=4),</p>	<p>Procedure: A systematic review of handoff literature focused on interventional studies that included patient outcome measures, such as preventable adverse events, code calls, and patient falls</p> <p>External Validity- Findings of bedside handoff effecting patient outcomes cannot be generalized due to the unclear nature of handoff and concurrent interventions attempting to improve patient outcomes in each hospital</p> <p>Internal Validity- Publication bias has the possibility of high-quality studies with negative or equivocal results to not be published.</p> <p>Reliability- low; scoring by reviewers is subjective if</p>	<p>Findings- After 10,774 articles were yielded (13,019 duplicates), 21 articles met criteria to be included in the review</p> <p>-In the 7 studies that measured falls, all showed improvements, but only 2 (29%) reported statistically significant improvements. However, because only 2 studies reported statistically significant reductions, the overall impact of handoff interventions on fall reduction remains unclear</p> <p>- For the 4 studies that measured hospital LOS, 3 reported a statistically significant decrease</p> <p>- Of the 4 studies that reported on mortality, 1 showed a nonsignificant increase</p>	<p>Conclusions- Handoff communication errors have been shown to cause adverse patient events</p> <p>- The current emphasis on handoffs began when communication errors that occur during handoffs were linked to adverse patient outcomes. As a result, The Joint Commission developed a National Patient Safety Goal in 2006 mandating the use of structured, standardized handoffs</p> <p>- In a recent analysis of the use of surrogate measures (satisfaction surveys), investigators concluded that hard outcome data are essential for true patient-centered health care</p> <p>-articles in this systematic review bring</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	<p>medication errors (n=4), medical errors (n=3), procedural complications (n=2), pressure ulcers (n=2), weekend discharges (n=2), and nosocomial infections (n=2)</p> <p>Analysis Plan: quality scoring by 2 reviewers with a system developed for and used in prior systematic reviews on handoff interventions. Overall interrater agreement was 98%, and Cohen's K for agreement between the 2 reviewers was k=0.97, P<.001. Any disagreements were resolved via discussion between reviewers to reach a final quality score for each article</p>	<p>disagreement in quality score</p> <p>Precision- Median quality score was 9.5 for all studies</p>	<p>and 3 showed a statistically significant decrease</p> <ul style="list-style-type: none"> - There was significant heterogeneity of interventions across the studies. Eight studies implemented handoff interventions in a bundle, 15 mentioned including a specific educational component to their handoff intervention, and 2 studies made scheduling or cross-coverage changes a part of their intervention. - Seven of the studies implemented standardized handoff mnemonics, including SBAR (Situation, Background, Assessment, Recommendations), Blue BARRWU (Blue, color of active diagnosis in electronic handoff system, Background, Alerts, Resuscitation status, Requests, Who to do what and when, Updates, Executable discharge plan), SIGNOUT (Sick or code status, Identifying data, General hospital course, New events of the day, Overall clinical condition, Upcoming possibilities with plan, Tasks to complete overnight), I-PASS (Illness severity, Patient summary, Action items, Situation awareness 	<p>closer link of handoff interventions to improved handoff safety. The majority of studies had results showing improvements in various patient outcomes; however, because of the heterogeneity of methods, limited number of studies, and inconsistent findings, it is impracticable to draw firm conclusions about specific interventions and associated outcomes.</p> <ul style="list-style-type: none"> - There currently remains a dearth of evidence supporting best practices for shift-to-shift handoff interventions with respect to improving patient safety and quality of care

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
			<p>and contingency planning, Synthesis by receiver), & P-VITAL (Present the patient, Vital signs, Input and output, Treatment and diagnosis, Admission or discharge, Legal Issues)</p> <p>-most of the studies were nonrandomized controlled trials, 2 cohort studies, and one each were: randomized crossover, mixed method, and posttest only</p> <p>-Quality assessment scores of the studies ranged from 2 to 15 (possible range= 1-16), 12 articles (57.1%) had quality scores at or below 10, and only one article scored a 15, 9 for studies not reporting funding, and 13 for studies that reported external funding</p>	
<p>Article 4: Mardis, T., Mardis, M., Davis, J., Justice, E. M., Holdinsky, S. R., Donnelly, J., Ragozine-Bush, H., & Riesenber, L. A. (2016). Bedside Shift-to-shift handoffs a systematic review of the literature. <i>Journal of Nursing Care Quality</i>, 31(1), p. 54-60. http://doi.org/10.1097/NCQ.0000000000000142</p> <p>Evidence level III- Systematic review of</p>	<p>Design: Systematic Review</p> <p>Sample: Purposive systematic review of English language articles published on bedside handoffs of any healthcare professional, with either quantitative or qualitative research data between Jan 1, 2008 and October 31, 2014</p> <p>Setting: Ovid MEDLINE In-Process & Other</p>	<p>External Validity- Findings of bedside handoff effecting patient outcomes cannot be generalized due to the unclear nature of handoff and concurrent interventions attempting to improve patient outcomes in each hospital</p> <p>Internal Validity- Risk is posed on the relationship between the intervention and outcome when only</p>	<p>Findings - 41 articles in this review, 22 (54%) were US-based research, 15 (37%) were Australian-based, 3 (7%) were Canadian-based, and 1 (2%) was conducted in Italy. The studies were conducted on a range of units, including pediatric and adult units, and emergency departments, medical, and surgical units. Included studies</p>	<p>Conclusions- Joint Commission has estimated that 80 %of serious medical errors involve miscommunication between caregivers when patients are transferred or handed-off.</p> <p>- Bedside handoffs allow a face-to-face interaction that includes the patient, clarification and resolution of erroneous information,</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>nonexperimental studies</p> <p>Quality B Good- Reasonably consistent results and recommendations based on fairly comprehensive literature review with some reference to scientific evidence</p>	<p>Non-Indexed Citations, EBSCOhost CINAHL, and Journals@Ovid.</p> <p>Framework: not discussed</p> <p>Measures: (1) self-report measures ask subjects (healthcare professionals and patients) to report their attitudes, beliefs, perceptions, and satisfaction, (2) process measures evaluate or assess activities conducted by healthcare providers (3) outcome measures evaluate or assess actual patient outcome</p> <p>Analysis Plan: Articles that met criteria were independently reviewed by at least 2 trained reviewers. The percent agreement on initial independent selection of articles for further review was 95%, and the Cohen k was 0.84 (p <.01). Abstraction disagreements were minor and quickly resolved during discussion between reviewers</p> <p>Procedure: systematic review of the research literature on the impact of a bedside shift to shift handoff on patients and provider</p>	<p>English- language articles were chosen. Ignoring non- English journals limits potentially relevant international articles. Some research studies with negative results or QI studies may not be published resulting in publication bias</p> <p>Reliability- low; scoring by reviewers is subjective if disagreement in quality score</p> <p>Precision- not discussed</p>	<p>published between 2009 and 2014</p> <p>- 14 (34%) articles contained mnemonics for use during shift handoff: 7 used SBAR (Situation, Background, Assessment, Recommendations), 1 used ISBAR (Introduction with SBAR), 1 used SBART (SBAR with Thank you), 1 used P-VITAL (Presenting information, checking patients' Vital signs, checking Input and output patterns, checking patients' Treatments, discussing Admission or discharge criteria, and filling out Legal documents), 1 used I-PASS the BATON (Introduction, Patient, Assessment, Situation, Safety concerns, Background, Actions, Timing, Ownership, and Next), and 1 used ISHAPED (Introduce, Story, History, Assessment, Plan, Error, and Dialogue) One study also used the slogan/acronym "Are you READY" to highlight the positive aspects of bedside nursing handoff (Reassures patients that we work as a team; Ensures interaction between staff and patients;</p>	<p>introduction of the oncoming nurse, and assessment of the patient during the handoff.</p> <p>- the primary purpose of handoff is the accurate communication of patient information from one care provider to another to improve patient care. Patient safety is an important metric that is lacking in the literature on bedside handoffs. Only 6 (15%) articles reviewed used patient outcome metrics to evaluate handoffs, and none reported statistically significant results</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
			<p>Allows us to visualize and prioritize care; Decreases patients' anxiety and uncertainty related to care; and Yields more satisfied staff and patients).</p> <p>Another used "Let's CHAT" as framework for their new reporting process (Communicate/clear permission with patient, collect patient History, Assess patient, and discuss Treatments) 5 (12%) articles involved the bundled Transforming Care at the Bedside (TCAB) initiative</p> <p>-Most studies used self- report measures which showed improved satisfaction or perceptions with bedside handoffs</p> <p>-6 (15%) studies assessed patient outcomes. One study documented a decrease in falls during handoffs from 1-2 per month to only one in 6 months. Another study reported a decrease in falls from 20 to 13, 3 months postimplementation and 4 falls after 13 months of implementation with documented medication errors</p>	

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
			<p>showing a decrease by 10 within 3 months</p> <p>- It was encouraging to see a reduction in patient falls noted in 5 studies, a decrease in catheter-associated urinary tract infections in 1 study. These studies raise the suggestion that bedside handoff could improve patient outcomes, but it is difficult to make these assumptions.</p>	
<p>Article 5: McAllen, E. R., Stephens, K., Swanson-Biearman, B., Kerr, K., & Whiteman, K. (2018.) Moving shift report to the bedside: An evidence- based quality improvement project. The Online Journal of Issues in Nursing, 23(2). http://doi.org/10.3912/OJIN.Vol23No02PPT22</p> <p>Evidence level III- Meta- analysis</p> <p>Quality B Good- Reasonably consistent results and recommendations based on fairly comprehensive literature review with some reference to scientific evidence</p>	<p>Design: QI study</p> <p>Sample: Convenience</p> <p>Setting: At a midwestern, 532- bed, acute care, tertiary Magnet designated teaching hospital, 3 nursing units incorporated bedside report into standard nursing care</p> <p>Framework: Iowa Model and Kotter’s eight stage process for major change. The plan, do, study, act cycles were used to evaluate the practice change in real- time to make necessary adjustments</p> <p>Measures: Fall rates, BSR audit tool, HCAHPS and Press Ganey® scores, and nurses’ response to a satisfaction survey</p>	<p>External Validity- Reported that the evidence- based quality improvement design prevents generalization of findings to other settings; however, the knowledge gained may be transferred to other units or hospitals</p> <p>Internal Validity- Hawthorne effect may have changed nurses behavior</p> <p>Reliability-Strong. It was reported that BSR is associated with improved patient outcomes</p> <p>Precision- Only the general surgery unit had statistically significant (p = 0.03) improvement in patient satisfaction after implementation of BSR with the</p>	<p>Findings - patient fall rates decreased by 24% in 4 months after BSR implementation compared to pre-implementation falls, and nurse satisfaction improved with four of six nurse survey questions (67%) having percentage gains in the strongly agree or agree responses following implementation of bedside report. HCAHPS and Press Ganey® results demonstrated improvement in Press Ganey® scores on two of the three nursing units.</p> <p>-Orthopedic unit had greatest reduction in number of falls at 55.6%, neuroscience unit at 16.9%, and the</p>	<p>Conclusions- implementation of bedside report had a positive impact on patient safety, patient satisfaction, and nurse satisfaction</p> <p>-For a health system to be successful and maintain its viability and future growth, patient safety and patient and nurse satisfaction are key components</p> <p>-In the literature, changing the location of shift report from the desk or nurses’ station to the bedside has been identified as a means to increase patient safety including a reduction in patient fall rates, and patient and nurse satisfaction</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	<p>were measured before and after the project implementation</p> <p>Analysis Plan: analysis of patient satisfaction results measured using independent same t-test (two-tailed) to determine statistical significance of data. Nurse satisfaction survey results and shift report time utilized the Mann-Whitney Utest, patient fall rates analyzed using the Chi-square test. Press Ganey® scores were analyzed by computing the mean score totals of eight specific questions related to patient satisfaction through comparison of data pre and post-implementation of BSR. HCAHPS scores were analyzed by computing mean score totals for two specific questions related to nurse communication through comparison of the data pre and post implementation of BSR.</p> <p>Procedure: 3 units were selected for project based upon directors' desire and willingness to participate. Members of these units volunteered to be a part of the BSR team. 2 scripts developed: one</p>	<p>average Press Ganey® score for the eight questions producing a result that increased from average score 87.7% to 91.6%.</p>	<p>general surgery unit at 6.9%</p> <p>- The audit results revealed a combined compliance rate of 94% (n= 157).</p>	<p>- BSR was associated with decreased fall rates, and this finding is consistent with the literature. Since falls occur for many reasons, it is not surprising that a single environmental scan at change of shift did not eliminate all falls. However, in one instance, nurses found a patient trying to climb out of bed during BSR and timely intervention may have prevented a fall. In the staff satisfaction survey, a nurse reported discovering a patient who had experienced a change in neurological status during BSR.</p> <p>- Patient participation in the report is paramount to delivery of safe, high quality care. Furthermore, through reading and discussion of the articles, the team concluded that report, when completed at the patient bedside, allows the nurse to visualize and assess patients and the environment, with better communication and patient involvement in care</p> <p>- Since an environmental scan for safety was part of BSR,</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	<p>for medical and one for surgical units with ISARQ format. The PDSA framework allowed staff input throughout the project</p>			<p>fall rates were used to measure patient safety. However, results of the nurse surveys suggested that improvements to communication and teamwork, which affect patient safety, may have also been realized</p>
<p>Article 6: Shahian, D. M., McEachern, K., Rossi, L., Chisari, R. G., & Mort, E. (2017). Large-scale implementation of the i-pass handover system at an academic medical centre. <i>BMJ Quality & Safety</i>. http://doi.org/10.1136/bmjqs-2016-006195</p> <p>Evidence level III- Systematic review of nonexperimental study</p> <p>Quality A High- Quality of data evaluated, specific techniques used to enhance the quality of the inquiry. Evidence of transparency, diligence, verification, self- reflection, participant- driven inquiry, and insightful interpretation noted.</p>	<p>Design: QI report Sample Purposive</p> <p>Setting: Massachusetts General Hospital (MGH) academic medical center</p> <p>Framework: 4- stage Kirkpatrick model</p> <p>Measures: Implement I-PASS across all MGH disciplines, venues and caregivers, thereby improving handoff and ultimately reducing medical errors and adverse events</p> <p>Analysis Plan: Descriptive survey, Handover observers analyzed adherence, 4- stage Kirkpatrick model (reaction, learning evaluations, behavior, results)</p> <p>Procedure: Multiple education techniques provided before system wide implementation of I-pass. Adaptation of basic I-pass structure</p>	<p>External Validity-Fair; Although reported that the large, metropolitan, academic medical center is where resident handovers predominate, potentially limiting generalizability, the basic principles could be easily extrapolated to other types of institutions</p> <p>Internal Validity- Difficult to link improved outcomes to I-pass because most institutions conduct multiple process improvement activities at any time. Hawthorne effect may have changed nurses behavior</p> <p>Reliability- Without active surveillance by trained nurses and physicians, results are challenging and costly to acquire in a non- investigational, operational setting</p>	<p>Findings – observational scores provided for each component of i- pass. initially low scoring area “illness severity, situational awareness and contingency planning, synthesis and correct sequence” all improved substantially, while patient summary, action list, and giver and receiver performance were high initially and remained so. Scores for synthesis were consistently among the lowest</p>	<p>Conclusions- Evidence from safety culture surveys, academic studies and malpractice claims suggests that healthcare handover quality is problematic, leading to preventable errors and adverse outcomes.</p> <ul style="list-style-type: none"> - Handoffs and transitions of care are typically among the lowest scoring domains in national summaries of Agency for Healthcare Research and Quality - A decade ago, estimates suggested that an average patient hospitalization was associated with 24 physician and nurse handovers and the number is undoubtedly larger now,13 14 providing even more opportunities for error - Health policy, regulatory and accreditation organizations all now recognize the need to

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	to service specific needs was emphasized.	Precision- not discussed		<p>improve and standardize healthcare handovers to achieve comparable levels of reliability</p> <ul style="list-style-type: none"> - Teaching hospitals are particularly vulnerable to handover-related adverse events and patient harm because of their complex case mix, size, frequent resident handovers and constantly changing trainee rotations -I-pass handover system has been rigorously studied, validated, and published in the peer-reviewed literature. This article found I-pass to be simple and intuitive; specifically designed for healthcare and can accommodate numerous complex patients and problems - I-PASS also incorporates two elements which are not as familiar to clinicians and much less consistently used in current handover practice —situational awareness/contingency planning and synthesis by receiver - Results of a pilot study using an I-PASS precursor, and a subsequent multicenter I-PASS

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
				study, have shown dramatic reductions in errors and adverse events, which greatly facilitates provider acceptance
<p>Article 7: Sun, C., Fu, C. J., O'Brien, J., Cato, K. D., Stoerger, L., & Levin, A. (2020). Exploring practices of bedside shift report and hourly rounding. Is there an impact on patient falls?. JONA: The Journal of Nursing Administration, 50(6), p. 355-362. http://doi.org/10.1097/NNA.00000000000000897</p> <p>Evidence level III- Non-experimental study with meta analysis</p> <p>Quality A High- Quality of data evaluated, specific techniques used to enhance the quality of the inquiry. Evidence of transparency, diligence, verification, self- reflection, participant- driven inquiry, and insightful interpretation noted.</p>	<p>Design: Descriptive</p> <p>Sample: Convenience</p> <p>Setting: study conducted at 4 hospitals: 2 large urban medical centers and 2 community hospitals</p> <p>Framework: not discussed</p> <p>Measures: (1)describe the relationship of inpatient falls to BSR and hourly rounding (2) Explore the relationship between nurse surveillance including BSR and HR and patient falls</p> <p>Analysis Plan: Descriptive statistics to assess frequency of BSR and HR, work sampling used to quantify nursing tasks; Data on falls collected by the hospital obtained and tested for associations with BSR and HR via 2 sample t test (Wilcoxon rank-sum test) and the x2 test (Fisher exact test)</p> <p>Procedure: Nurses were recruited to the study via direct verbal communication, and</p>	<p>External Validity- Strong; study analyzed performed in multiple locations, creating generalizability to other settings</p> <p>Internal Validity- This study is limited by the fact that the data were collected in 15-minute intervals rather than through constant observation; these intervals may not have captured every BSR or incidence of HR and potentially cause and effect</p> <p>Reliability- weak; results can not be replicated because of work sampling and subjective data</p> <p>Precision- Adjusted odds ratios (ORs) and 95% confidence intervals (CIs) for all predictor variables of interest were estimated from the multivariable model</p>	<p>Findings – 9,693 observations were recorded on 11 units at 4 hospitals over 281 shifts</p> <p>-falls were associated with shift and day of the week but not BSR, HR, or the frequency of encounters with the patient</p> <p>-Tests for associations between falls and predictor variables revealed statistically significant differences between day and night shift associations between falls and day shift/night shift ($w_2 = 5.34, P = .02$) with falls more often occurring on night shift; and day of the week ($w_2 = 17.26, P < .01$) with falls most often occurring on Monday</p>	<p>Conclusions- Increased nurse frequency with patient may signal increased fall risks. Bedside shift report and HR may require robust and sustained interventions to provide lasting effects.</p> <p>- In 2005, in an effort to improve healthcare quality and concomitantly reduce costs, Congress identified hospital-acquired conditions that would no longer be paid for by the Centers for Medicare & Medicaid Services.² Falls were among the list of non-reimbursable hospital-acquired conditions citing falls as a “serious preventable event.</p> <p>- While there has been a plethora of fall-prevention strategies globally in a variety of settings,^{11,12} evidence suggests that nursing presence is directly related to the incidence of falls, with each additional RN hour per patient day</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	<p>they verbally consented to participating in the study. Work sampling used for each nurse observed in intervals of 15 minutes at all hours of the day and all days of the week; their activities were recorded at these intervals using a previously published instrument, adapted for the needs of the study</p>			<p>associated with a reduced fall rate.</p> <ul style="list-style-type: none"> - Nurses are critical to improving healthcare quality and reducing costs^{19,20} as nurses spend more time with patients than any other healthcare worker, and the quantity of that time spent is directly correlated with patient safety. - Nurse surveillance has been seen as integral in reducing errors and improving patient outcomes, and nurses are seen as key contributors to overall patient surveillance
<p>Article 8: Agency for Healthcare Research and Quality. (2017). Nurse Bedside Shift Report Implementation Handbook. https://www.ahrq.gov/sites/default/files/wysiwyg/Professionals/systems/hostpital/engagingfamilies/stRategy3/Strat3_Implementation_Hndbook_508.pdf</p> <p>Evidence Level IV- Opinion of nationally recognized expert committees based on scientific evidence</p>	<p>Design- Summary of research evidence</p> <p>Sample- 3 hospitals implemented the Guide BSR strategy as part of a year- long pilot project: Advocate Trinity Hospital in Chicago, IL; Anne Arundel Medical Center in Annapolis, MD, and Patewood Memorial Hospital in Greenville, SC</p> <p>Framework- Not discussed</p> <p>Measures- Safe handoff of care between nurses by involving the patient and family.</p>	<p>External validity-This strategy can be applied to different nurses in different healthcare settings with similar conclusions.</p> <p>Reliability- The nurse bedside shift report strategy is flexible and adaptable to each hospital’s environment and culture.</p> <p>Precision- Not discussed</p>	<p>Findings- Research shows that when patients are engaged in their health care, it can lead to measurable improvements in safety and quality.</p> <ul style="list-style-type: none"> -Bedside shift report can improve patient safety and quality, patient experience of care, nursing staff satisfaction, time management and accountability between nurses -One study found that 70% of adverse events are caused by breakdowns in communication among caregivers and 	<p>Conclusion-Nurse shift changes require the successful transfer of information between nurses to prevent adverse events and medical errors</p> <ul style="list-style-type: none"> -Nurse bedside shift report helps ensure the safe handoff of care between nurses by involving the patient and family -Improved communication during shift report can help catch potential medical errors in blood incompatibility, catheter- associated urinary tract infections, and air embolism, all of

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>Quality A High- National expertise of clinical practice guidelines clearly evident, consistent results with strength and quality of included studies and definitive conclusions</p>	<p>Analysis Plan- Not discussed</p> <p>Procedure- Clinical practice guidelines for nurse bedside shift report</p>		<p>between caregivers and patients. Studies have shown that bedside shift report improves patient safety and service delivery</p> <p>-One study showed a decrease in patient falls during change of shift, dropping from one to two patient falls per month to one patient fall in six months</p> <p>-One study noted a decrease in over shift time by 100 hours in the first two pay periods on a 32- bed general surgical unit</p> <p>-In another study, on a 34-bed progressive care unit, a 2- month review of overtime data demonstrated an \$8,000 reduction directly associated with the decrease in time for shift report</p> <p>-One study noted a sharp decline in the average number of call lights on by the end-of-shift change</p>	<p>which are on the Centers for Medicare and Medicaid Services’ list of hospital-acquired complications “never events”</p> <p>-Key to success- Support from senior leaders like the CNO for implementing nurse BSR, dedicated nurse leaders to continue to pursue BSR, even when facing challenges, ensure everyone knows what to do, increased buy-in because nurses saw the benefit of BSR and knew hospital leaders supported it, and have committed nurse champions to make sure BSR continues to happen</p>
<p>Article 9-Joint Commission Center for Transforming Healthcare. (2014). Improving Transitions of Care: Hand- off Communications. https://www.centerfor</p>	<p>Design-Robust Process Improvement- a fact-based, systematic and data- driven problem-solving methodology</p> <p>Sample-not discussed</p>	<p>External Validity- Strong; study has been used in multiple locations across the United States. It is reported that the handoff communications</p>	<p>Findings- 7/10 hospitals culture does not promote successful handoff and expectations between sender and receiver differ</p>	<p>Conclusions- A handoff is a transfer and acceptance of patient care responsibility achieved through effective communication.</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>transforminghealthcare.org/-/media/cth/documents/improvement-topics/handoff_comm_storyboard.pdf</p> <p>Evidence Level IV- Nationally recognized expert committees summarizing a research study based on scientific evidence</p> <p>Quality A High-Material officially sponsored by a nationally recognized organization, consistent results with sufficient numbers, definitive conclusions, national expertise is clearly evident</p>	<p>Setting- 10 hospitals across the United States: Exempla Lutheran Medical Center, Fairview Health Services, Intermountain Healthcare LDS Hospital, The Johns Hopkins Hospital, Kaiser Permanente Sunnyside Medical Center, Mayo Clinic Saint Marys Hospital, New York- Presbyterian Hospital, North Shore-LIJ Health System Steven and Alexandra Cohen Children’s Medical Center, Partners HealthCare, Massachusetts General Hospital & Stanford Hospital and Clinics</p> <p>Framework- not discussed</p> <p>Measures- identifying specific causes of an inadequate handoff and improve organizations handoff communications process</p> <p>Analysis Plan- Successful handoff between clinicians: sender/receiver is measured. Receivers experienced less successful handoffs (37%) than senders (21%); Statistically significant P value= .001</p>	<p>project can include looking at transitions of care to external facilities also</p> <p>Internal Validity- Strong content validity of the TST measuring the effectiveness of handoffs within each unique organization</p> <p>Reliability-Strong; Results have shown to improve handoff communication with TST</p> <p>Precision- The TST was able to show statistical significance (P value= .001) in participating hospitals experiencing less successful handoffs to receivers than senders</p>	<p>-6/10 hospitals validated root causes for handoff communication failures due to ineffective communication method</p> <p>-a lack of standardized procedures in conducting successful handoff was identified as a failure in 4/10 hospitals</p> <p>-All 10 participating hospitals had a handoff communication failure with the sender providing inaccurate or incomplete information like medication list, DNR, concerns/ issues, and contact information</p> <p>-7/10 hospitals validated handoff failure from sender, who has little knowledge of patient, is handing off patient to receiver</p> <p>-After the targeted solutions tool was fully implemented in participating hospitals (N=7) with defective handoffs for the receiver, there was a 56% reduction (41% vs 18%) in defect rates based on overall satisfaction of the handoff (p-value= 0.007)</p>	<p>-The mnemonic SHARE was developed by the participating hospitals of solutions linked to specific root causes</p> <p>- It is a real-time process of passing patient specific information from one caregiver to another or from one team of caregivers to another for the purpose of ensuring the continuity and safety of the patient’s care.</p> <p>- Ineffective handoff communication is recognized as a critical patient safety problem in health care. When a patient moves from one care setting to another, poor communication can result in patient harm, increased costs, and patient dissatisfaction.</p> <p>- The consequences of substandard handoffs may include delay in treatment, inappropriate treatment, adverse events, omission of care, increased hospital length of stay, avoidable readmissions, increased costs, inefficiency from rework, and other minor or major patient harm</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	<p>Procedure-The Center’s Handoff communications targeted solutions tool (TST) is an innovative web- based application designed to help health care organizations understand barriers to successful handoffs and implement evidence- based solutions that lead to reductions in adverse events caused by faulty communication</p>		<p>- One hospital focused on transitioning patients from their in-patient units to a nursing home and were able to reduce their inadequate handoffs from 29% in baseline to <1% after improvements were put in place.</p> <p>- This improvement in handoff communications was attributed to reducing their 30-day readmission rates from 21% in baseline to 10% after improvements.</p>	<p>- Of the 25,000 to 30,000 preventable adverse events that led to permanent disability in Australia, 11 percent were due to communication issues, in contrast to 6 percent due to inadequate skill levels of practitioners</p> <p>-While handoffs happen hundreds of times a day within and between healthcare organizations, ineffective handoff communications are a primary contributing factor in adverse events</p>
<p>Article 10: World Health Organization. (2021). Falls. https://www.who.int/en/news-room/fact-sheets/detail/falls</p> <p>Evidence Level IV- Opinion of Nationally recognized expert committees based on scientific evidence</p> <p>Quality A High-Material officially sponsored by a nationally recognized organization, consistent results with sufficient numbers, definitive conclusions, national expertise is clearly evident</p>	<p>Design: position statement</p> <p>Sample: not discussed</p> <p>Setting: not discussed</p> <p>Framework: not discussed</p> <p>Measures: not discussed</p> <p>Analysis Plan: not discussed</p> <p>Procedure: not discussed</p>	<p>External Validity: The same conclusions can apply in the same populations in another location. Falls are a global problem.</p> <p>Reliability- not discussed</p> <p>Precision- not discussed</p>	<p>Findings- Prevention strategies should emphasize education, training, creating safer environments, prioritizing fall-related research and establishing effective policies to reduce risk.</p> <p>-Globally, falls are a major public health problem</p> <p>- Globally, falls are responsible for over 38 million DALYs (disability-adjusted life years) lost each year(2), and result in more years lived with disability than transport injury, drowning, burns and poisoning combined.</p>	<p>Conclusions- Falls are the second leading cause of unintentional injury deaths worldwide</p> <p>- Adults older than 60 years of age suffer the greatest number of fatal falls</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>Article 11: Blazin, L. J., Sitthi-Amorn, J., Hoffman, J. M., & Burlison, J. D. (2020). Improving patient handoffs and transitions through adaptation and implementation of i-pass across multiple handoff settings. Pediatric Quality and Safety, 5(4).</p> <p>http://doi.org/10.1097/pq9.0000000000000323</p> <p>Evidence level V- Organizational Experience/ Quality Improvement</p> <p>Quality B Good- purpose and objectives clearly stated, consistent results in a single setting, reasonably consistent recommendations with some reference to scientific evidence, good literature review</p>	<p>Design- QI study</p> <p>Sample- Quota sample of inpatient nursing bedside report, physician handoff, and imaging/procedures handoff</p> <p>Setting- St. Jude Children’s Research Hospital</p> <p>Framework- Plan Do Study Act 4- stage model</p> <p>Measures- Adherence to the I-PASS mnemonic (primary outcome measure), perceptions of handoff errors, and self-reported change in overall and personal handoff performance following I-PASS implementation</p> <p>Analysis Plan - adherence to i-pass analyzed by statistical process control (SPC) charts and p- charts.</p> <p>- Pre- and post-implementation differences in nursing-perceived handoff errors by a 1- way repeated measure analysis of variance.</p> <p>-Descriptive statistics to report respondent perceptions of global and personal handoff performance changes</p>	<p>Internal Validity- not a controlled study, so the result could be caused by other variables. Direct observation has the potential for the Hawthorne effect.</p> <p>Reliability- It was admitted that the hospital’s unique patient population and care model may limit the project’s generalizability</p> <p>Precision- statistically significant improvements for inpatient nurses, physicians, and diagnostic imaging technologists P< 0.001.</p>	<p>Findings- For all 3 departments, the initial handoff adherence goal of 75% during the first 6 months of implementation was revised to 90% during the third month due to strong performance and remained at 90% for the remainder of the project</p> <p>-inpatient nursing and imaging/procedures adherence was strong and consistent: mean= 87% and 89% respectively</p> <p>-physician evening handoff performance was variable and had a mean adherence of 76% over the study period. However, special cause rules dictated a centerline shift for physician handoff performance, with an initial mean of 73% increasing to 89% for the period after the shift</p> <p>-Before i-pass, mean number of perceived handoff errors per handoff encounter for inpatient nursing was 0.42 errors per handoff. At 8, 16, and 24 weeks postimplementation, the mean number decreased to 0.06,</p>	<p>Conclusion-I-Pass contains 5 components of quality patient handoff: illness severity (I), patient summary (P), action list (A), situational awareness and contingency plans (S), and synthesis by the receiver (S)</p> <p>-I-pass aims to help clinicians develop a shared mental model of each patient so that every clinician involved in the patient’s care can make decisions aligned with overall goals.</p> <p>-I-Pass has strong evidence that its use can reduce errors and has emerging evidence that it can be adapted broadly across handoff contexts</p> <p>-3 fundamental factors for successful I-pass adaptation, implementation, and sustained use are: broad institutional support and commitment, custom-written handoff tools for each handoff setting that incorporates I-pass formatting, and ongoing use of direct observations with formative feedback</p> <p>-While I-pass was developed for resident</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	<p>related to i-pass implementation.</p> <p>-The mean pre- and post- I- PASS personal handoff effectiveness perceptions compared with paired samples t-tests.</p> <p>Procedure- Clinician team members from each department advised the development of a customized written handoff tool after identifying clinical details necessary for handoffs. Once training was provided, peer observed handoffs, scored performance, and provided formative feedback</p>		<p>0.19, and 0.13, respectively</p> <p>-Post i-pass implementation error rates were significantly lower (P<0.05)</p> <p>-2018 Patient Safety Culture Survey yielded an overall response rate of 69%. 75% inpatient nurses, 80% physicians, 94% diagnostic imaging technologists, and 46% of procedure nurses reported i-pass improved overall handoff quality</p> <p>-Paired sample t-tests showed significant improvements from all 3 departments (p< 0.001) when means of personal perceptions of handoff effectiveness was compared. Results were not significant for procedural nurses</p> <p>-The authors have no financial interest to declare in relation to the content of this article</p>	<p>physician handoffs, it has shown to be flexible, effective, and customized across many disciplines</p>
<p>Article 12: Hada, A., Coyer, F. (2021). Shift-to-shift nursing handover interventions associated with improved inpatient outcomes-Falls, pressure injuries and medication administration errors:</p>	<p>Design- Integrative review</p> <p>Sample- Quota sample of prospective or retrospective quantitative, qualitative, and mixed-methods studies published in English between Jan 1, 2007</p>	<p>External Validity- seven of the eight included studies was their restricted generalizability due to small samples</p> <p>Content Validity- the MMAT is based on a literature review of systematic mixed study</p>	<p>Findings- improvements in handover communication had a clinically important positive effect on patient outcomes.</p> <p>- The effect of interventions aimed to improve shift-to-shift</p>	<p>Conclusions-</p> <p>- This integrative review highlights that the implementation of bedside nursing handover and the adoption of standardized handover tools to improve nursing handover</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>An integrative review. Nursing & Health Sciences. https://doi.org/10.1111/nhs.12825</p> <p>Evidence Level V- Integrative Review</p> <p>Quality B Good-Fairly definitive conclusions drawn with credible expertise; logical argument for opinions</p>	<p>and July 31, 2020; any nursing intervention designed to improve nursing handover compared with a previous nursing handover, studies objectively measuring quantitative/ qualitative data reporting on inpatient outcomes (fall, pressure injuries, and medication errors); studies conducted in subacute, rehabilitation, and oncology inpatient units were included in sample</p> <p>Setting -determine interventions to improved patient outcomes in the adult acute hospital setting</p> <p>Framework-The Preferred Reporting Items for Systematic reviews and meta-analyses statements (PRISMA)and the Cochrane Handbook for Systematic Reviews of Interventions were used to guide the review</p> <p>Measures- identify which nursing handover interventions were associated with improved patient outcomes, specifically patients’ falls, pressure injuries, and</p>	<p>reviews and been pilot-tested across all methodologies</p> <p>Reliability- a few studies described interventions shown to have positive outcomes reflected in a reduction of falls, pressure injuries, and medication errors, the results are inconclusive due to the heterogeneity of methods, limited number of studies, and inconsistent findings</p> <p>Precision- The variations in population, interventions used, outcome measures, as well as study design, procedure, and analysis of included studies made comparison challenging.</p>	<p>nursing handover communication on reducing the number of patient falls in acute inpatients units was assessed in all eight included studies. Six of the eight studies (75%) reported a decrease in the number or proportion of patients experiencing a fall postintervention</p> <p>-One study that was conducted showed a 50% reduction in the number of falls across multiple sites</p> <p>-Another study found that reported falls that resulted in patient harm was reduced from 97% preimplementation to 51% postimplementation (46% difference)</p> <p>- Across the studies, reductions in falls varied from 9.3 to 80%, pressure injuries from 45 to 75%, and medication errors from 11.1 to greater than 50%.</p> <p>-eight included studies were published between 2009 and 2019 and conducted in two countries: 5 in Australia and 3 in the United States. Although using different designs and</p>	<p>communication reduce patient adverse events, specifically falls, pressure injuries, and medication errors.</p> <p>- Effective communication during the shift-to-shift nursing handover has been the focus of international research for many years, as the accuracy of information transferred can directly impact patient safety.</p> <p>- findings report that changing the location of the nursing handover to the bedside and the adoption of a structured communication technique such as SBAR were the main nursing interventions used to standardize and improve the handover process and content. This approach is consistent with best practice evidence. International and national guidelines and recommendations advocate for the bedside handover with active patient participation.</p> <p>- Measuring the incidence of falls for the duration of the study rather than the</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
	<p>medication errors in the hospital setting</p> <p>Analysis plan- Methodological quality was rated based on The Mixed Methods Appraisal Tool (MMAT)</p> <p>Procedure-systematic search of 7 electronic databases was conducted. Two independent reviewers assessed the retrieved articles using the mixed methods appraisal tool. Eight studies met the inclusion criteria</p>		<p>interventions, the 8 studies demonstrated importance of improved handover communication in reducing the risk of patient falls, pressure injuries, and medication errors</p>	<p>prevalence of falls at handover time provides a better understanding of the effect of handover intervention on falls</p> <p>-Organizations such as the WHO and the Australian Commission for Safety and Quality in Health Care (ACSQHC) identified communication during clinical handover as a priority. The ACSQHC emphasizes that the transfer of responsibility and accountability for patient care includes structured communication tools an opportunity for both the clinicians and patients to request, check and confirm understanding of information discussed.</p> <p>- Communication failures during the handover have been associated with poor patient outcomes including inaccurate clinical assessment and diagnosis, delays in diagnosis, delays in ordering tests, medication errors, inconsistent or incorrect results interpretation, duplication of tests, increased rates of in-hospital complications,</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
				<p>increased length of hospital stay, and decreased patient and staff satisfaction</p> <p>-It has been identified that ineffective handover communication is a main root causing over 60% of sentinel or catastrophic patient event. Therefore, effective handover communication is essential</p> <p>- Although there is limited evidence on the effects of handover interventions associated with improved patient outcomes in the hospital setting, structured handovers contribute to reducing the number of errors in information transfer</p> <p>-All included studies incorporated changing the handover location to the bedside. Additionally, 5 of 8 studies adopted various standardized or structured handover tools and processes.</p> <p>- It has been recognized that a structured, standardized handover supports nurses to perform accurate patient assessments, make knowledgeable</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
				<p>decisions about the management of patient risks, and anticipate possible adverse events associated these risks</p>
<p>Article 13: Pop, H., Lamb, K., Livesay, S., Altman, P., Sanchez, A., & Nora, M. E. (2020). Tailoring a comprehensive bundled intervention for ED fall prevention. Clinical Nurses Forum, 46(2). http://doi.org/10.1016/j.jen.2019.11.010</p> <p>Evidence level V- Organizational Experience/ Quality Improvement</p> <p>Quality B Good- purpose and objectives clearly stated, consistent results in a single setting, reasonably consistent recommendations with some reference to scientific evidence, formal QI and financial evaluation methods used</p>	<p>Design: QI study</p> <p>Sample: Purposive</p> <p>Setting: 60-bed ED that serves both adult and pediatric populations</p> <p>Framework: not discussed</p> <p>Measures: use of an appropriate tool to assess fall risk, improve staff communication, facilitate safe ambulation and toileting, educate patients, provide early warning, prevent injury, and embed fall prevention into unit culture</p> <p>Analysis Plan: analysis of bundle metrics, such as extent of fall risk screening, fall precaution application, and rate and type of patient falls</p> <p>Procedure: After education and an online module the fall prevention bundle was implemented into clinical practice and fall risk screening merged into the EHR</p>	<p>External Validity- poor, reported that validity of the fall bundle through a rigorous single site or initial multisite design has yet to be determined</p> <p>Content Validity- reported that utilizing input of departmental and organizational nursing leadership</p> <p>Reliability-Fair, it was reported that with the implementation of the fall bundle, patient falls decrease</p> <p>Precision- not discussed</p>	<p>Findings - quarterly fall rate reduced to 0.27 falls per 1,000 visits with no fall-related injuries</p> <p>- 86% of at-risk patients with fall precautions applied</p>	<p>Conclusions- Falls in the emergency department pose an important challenge for patient safety.</p> <p>- Falls in the emergency department account for 6% of hospital-wide falls and often result in use of additional resources, unplanned hospitalization, and poor patient outcomes.</p> <p>When compared with other areas of the hospital, a fall in the emergency department is more likely to result in injury or death</p> <p>- fall risk factors unique to the emergency department, such as intoxication ,are lacking from inpatient tools and may account for up to20% of ED falls</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>Article 14: Stoeckle, A., Iseler, J. I., Havey, R., & Aebersold, C. (2019). Catching quality before it falls: Preventing falls and injuries in the adult emergency department. Practice Improvement, 45(3). http://doi.org/10.1016/j.jen.2018.08.001</p> <p>Evidence level V- Organizational Experience/ Quality Improvement</p> <p>Quality B Good- purpose and objectives clearly stated, consistent results in a single setting, reasonably consistent recommendations with some reference to scientific evidence, formal QI and financial evaluation methods used</p>	<p>Design: QI study</p> <p>Sample: Purposive sample</p> <p>Setting: 87- bed, level 1 trauma Emergency Department in a large midwestern hospital</p> <p>Framework: Lippitt’s change theory</p> <p>Measures: Promote a culture of safety by identify and implement evidence- based interventions to prevent falls and injuries in the ED</p> <p>Analysis Plan: Chart audits , ED fall rates measured on a monthly basis, and weekly rounds to measure staff adherence</p> <p>Procedure: Literature was reviewed to identify best practices, and root cause analysis was completed on fall-related risk reports over a 19- month period. Multifactorial fall prevention interventions were implemented including nursing education, patient education handout, & high- fall-risk patient identification signs</p>	<p>External Validity- Generalizability of fall interventions may be limited to large midwestern emergency departments in the US that use EHRs and similar fall- risk assessment tools</p> <p>Internal Validity- Hawthorne effect may have changed nurses behavior during weekly rounds and knowing charts are being audited during a specific time frame</p> <p>Reliability- potential risk due to the current fall- risk assessment tool not ED- specific nor inclusive of patients at high risk for fall- related injuries</p> <p>Precision- not discussed</p>	<p>Findings- Post-implementation, zero falls were sustained in April 2017</p> <ul style="list-style-type: none"> -The average number of falls between April and December 2017 was 5.2 falls/month - Completion of the fall-risk assessment tool ranged between 47 to 90% - patient education handout was provided up to 40 percent of the time - use of fall risk signs outside patient rooms occurred up to 43 percent of the time 	<p>Conclusions- Although hospital falls and injuries are a significant patient safety concern, research is limited regarding falls and injuries in the emergency department</p> <ul style="list-style-type: none"> - The emergency department is a unique environment with complex patient populations. - Unintentional falls resulting in injury, significantly increase the rates of morbidity and mortality among the adult-gerontology population -Falls result in an estimated cost of \$31.3 billion annually to the healthcare system, with 21% of that cost directly related to the ED - A previous fall is the number-one predictor for a future fall;2 thus, falls in the emergency department may occur, especially if it’s the chief complaint - The risk of falls rises even more in emergency departments because of the high-acuity, fast-paced, and crowded environment. Despite the high risk for falls in emergency

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
				<p>departments, a majority of research pertains to inpatient hospital falls.</p> <p>- The combination of the crowded, fast-paced, high-acuity emergency department with the specific ED patient population increases the risk for falls and injuries to occur. These risk factors make emergency nurses the front line for assessing risk of falls and implementing appropriate interventions and precautions early on</p>
<p>Article 15: White-Trevino, K., & Dearmon, V. (2018). Transitioning nurse handoff to the bedside engaging staff and patients. <i>Nursing Administration Quarterly</i>, 42(3), p. 261-268. http://doi.org/10.1097/NAQ.0000000000000298</p> <p>Evidence level V- Organizational Experience/ Quality Improvement</p> <p>Quality A High- purpose and objectives clearly stated, consistent results across multiple settings, consistent</p>	<p>Design: QI study</p> <p>Sample: Purposive sample with 46 ED RNs</p> <p>Setting: 39- bed hospital based ED</p> <p>Framework: SBAR-T framework</p> <p>Measures: transition nurse handoff at shift change to the patient bedside; promote nurse adoption of SBAR-T structure; include patients/family in the report process; evaluate nurses' perception of their influence on 5 patient satisfaction care variables postintervention; and</p>	<p>External Validity- QI project is easily replicated in hospital nursing units.</p> <p>Internal Validity- Sampling bias may have occurred, since observations did not include all shift changes and consisted of a small sampling of handoff observations. The Hawthorne effect may have influenced success of the practice change since the observer was the chief nursing officer of the facility</p> <p>Reliability- survey results are subjective, therefore results have</p>	<p>Findings - Of 13 handoffs observed, 92% occurred at the bedside and 54% of patients actively participated in the report process. The offgoing nurses adopted most elements of the handoff process, while the oncoming nurses were less successful</p> <p>- Only 35% (16 of 46 participants) responded to the online postintervention survey. Wilcoxon scores were calculated with a χ^2 of 0.356, which is not a statistically significant finding</p>	<p>Conclusions- The emergency department is a complex environment in which reliable communication is vital</p> <p>for safe patient care</p> <p>-Communication during nurse shift report can be risky without an effective report process in practice.</p> <p>- Moving nurse handoff to the bedside and standardizing the report process represented a significant change for nurses in the ED</p>

Brief Reference, Type of study, Quality rating	Methods	Threats to Validity/ Reliability	Study Findings	Conclusions
<p>recommendations with thorough reference to scientific evidence, formal QI and financial evaluation methods used</p>	<p>improve patient perceptions</p> <p>Analysis Plan: Observation of BSR using SBAR-T competency checklist, nurse, and patient surveys, a nonparametric analysis using Wilcoxon scores on each of the 5 care variables of influence, and Patient satisfaction with nurse communication was assessed using indicators from the Press Ganey Emergency Department survey</p> <p>Procedure: Moving nurse handoff to the bedside and standardizing the report process</p>	<p>potential to not be replicated</p> <p>Precision- not discussed</p>	<p>- Nurses believed that the new process influenced their ability to respond to patient needs and patients were more satisfied with nurses.</p> <p>- A structured, patient-centered bedside handoff process can reduce safety risk and promote satisfaction with care through reliable information exchange</p>	<p>-Reliability improves with the use of a standardized, patient-centered nurse handoff process</p>