Using a Structured Electronic Handoff

To Prevent Delays in Hospital Discharge

By

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Table of Contents

List of Tables

Lists of Figures

List of Appendices

Abstract

Ineffective communication and documentation have been found in the literature to have negative impact on patient safety and discharge delays in a hospital setting. This quality improvement project emphasizes the importance of handoff accuracy as it relates to patient care. A structured electronic handoff tool provides an organized method of sign out and can improve communication among caregivers. The objective of this initiative was to see if using a structured electronic handoff would improve the discharge process and patient safety outcomes as compared with a paper handoff tool. Permission to perform the project was obtained from the Nursing Director of the NICU along with approval of the Institutional Review Board (IRB). After permission was obtained, participants in the project were provided with a packet containing a pre-test, a PowerPoint education addressing knowledge about I-PASS and a post test. 60 RNs completed the study. The analysis revealed a statistical significance in the pre- and post-test scores ($S= 271$, $p<.00001$) on the question about the meaning of I-PASS. This project demonstrates there is still a great need for continual research to determine best practices regarding improvement in the discharge process and patient safety outcomes. Continued research is needed to evaluate the effectiveness in using I-PASS as a handoff tool to improve the discharge process and patient safety in the NICU.

Keywords: handoff, structured electronic handoff, I-PASS, patient safety, NICU nurses

Chapter One: Introduction and Overview of the Problem

Chapter one of this scholarly paper will establish the background pertaining to the importance of improving the effectiveness of hand off communication. An effective nursing handoff bolsters the standardized exchange of accurate, auspicious, important patient data, as well as the consistency of care and treatment, resulting in patient safety. This chapter will further discuss the significance of the (PICO) problem as well as present the patient or problem, intervention, comparison, or outcome question to be examined in this study. In addition, chapter one introduces the Berlo's Dyadic Communication Model. This is the framework that will be used to implement a standardized, electronic patient hand off communication tool in a level three Neonatal Intensive Care Unit.

Background

At a level III NICU in Brooklyn, New York the current patient handoff has been identified as a system design that needs to improve. Currently, the nurses are using a handoff that is on paper. There is a general handoff in the electronic medical record which is not applicable for NICU patients and many of the nurses have identified that it is not easy to use. There have been no in services offered to the nursing staff on how to apply the electronic hand off when giving report to the oncoming shift. The current hand off that is being used does not give a background of the patient, events leading up to admission or hospital course. More than 80% of sentinel events come from issues related to poor communication, continuity of care and care planning (Dyches,2014).

Guidelines for a safe handoff will focus on standardizing the sign out system. The structure of the handoff must enhance the quality in both the written and verbal exchange of

information. The purpose of an electronic handoff is to prevent ineffective communication and documentation errors to enhance patient safety. The electronic hand off can also be used as a checklist to ensure that all the information about the patient is included in an organized manner. Checklists have become completely ordinary in many intensive care units (ICU) to improve care quality (Gershengorn, Kosher, &Factor,2014).

Significance

The electronic medical record (EMR) is a necessary information source and a means of communication access to create a common experience of the patient among collaborating health 1care providers. As defined by Mastrian and McGonigle (2017), the purpose of the EMR is to "support efficient, high-quality health care across the client's health care continuum" (p, 414). Computerized documentation allows universal information access by many users and overcome issues such as legibility. EMR provides a more thorough, complete, and detailed documentation of patient information and clinical details than paper charting (Chao,2016).

The Joint Commission recommends that all health care providers use the electronic health record to achieve a more effective handoff communication including an opportunity to ask and respond to questions (The Joint Commission, 2014). Enhancing handoff communication can upgrade patient safety by maximizing provider presentation. Other than enhancing provider communication, another added advantage is expanding mindfulness in the significance of successful handoff communication. Enhancing hand off communication offers an opportunity to educate the staff on essential components of quality handoff communication (Dyches,2014).

The Joint Commission of Center for Transforming Healthcare define patient care hand-off, (2014) as "as transfer and acceptance of patient care responsibility achieved through

effective communication". Patient care handoff is also the passing of information from one team member to another for continuity of patient care, effective coordination, and communication. Patient care handoff is standard practice in the Neonatal Intensive Care Unit (NICU), and it occurs multiple times during a patient hospital stay. Very few published guidelines specific for NICU nursing handoffs were found in the literature. One study found that using a hand off tool generated by the EMR in the NICU, providers were content, spent less time preparing for sign out and felt that the quality of the information shared improved (Palma, Sharek, & Longhurst,2011).

No best practices have been identified specifically for the NICU handoff. Handoff is a very important nursing activity. When it is not done properly, it can lead to different degrees of errors and omissions. The healthcare organization in Brooklyn, NY have attempted to create their own tool to be used by the outgoing nurse to sign off their patients to the staff of the next shift in the NICU. This NICU created a tool on paper which includes all the critical elements to handoff a patient. This tool has not been successful on the unit because the nurses have identified the tool as being cumbersome and not clearly identifying situation awareness, a summary statement and contingency planning. The nurses are manually filling out the paper tool for each shift which is not allowing for a quick and efficient hand off.

Creating a hand off tool in the electronic record will have all the necessary information for the nurses to have without having to look in different locations. Handoffs should allow for the receiver to synthesize the information to summarize what was heard and reinstate the plan of care. There will also be an area in the hand off tool where nurses can manually enter notes essential for communication for the oncoming shift. A hand off tool in the electronic medical record will allow for better hand off which will encourage safer care.

Question Guiding Inquiry (PICO)

The purpose of the scholarly project is to implement a standardized, electronic patient handoff tool in a level III NICU to improve the process of hospital discharge and promote patient safety. The PICO question guiding the project is as follows: In Neonatal healthcare providers working in a NICU (**P**opulation) does an electronic hand off communication tool (**I**ntervention) positively improve the discharge process and patient safety outcomes (**O**utcome) as compared with a paper hand off tool? (**C**ompare).

Theoretical Framework

The theoretical framework that will support the scholarly project of using an electronic hand off tool in a Level III NICU is the Berlo's Dyadic Communication Model. Effective communication is important for safe and effective handoff. The Communication Process Model, also referred as the Berlo's Dyadic Communication Model is chosen as the theoretical framework for this project because it supports the importance of standardized communication of patient care handoff (Patton et al., 2017). The Berlo's model has four components to describe the communication process. The components of this model are the sender, message, receiver, and feedback. The sender is invigorated to transmit a message and after that encodes and sends it. The sender transfers the information by having communication skills such as the ability to read, write, speak and listen. These skills directly affect the communication process. As the sender encrypts the message the collector must receive, interpret, and process the data as indicated by clarifying the message and provide any essential criticism or feedback (Patton et al.,2017). Effective communication requires similar language so that the message is clear for the receiver to understand the message and provide feedback. A standardized handoff tool will

enable the sender and recipient to convey utilizing a similar language through a standardized procedure.

Definition of terms

Berlo's Dyadic Communication Model: Explains the various components in the communication process which are the sender, message, receiver and feedback (Patton et al.,2017).

Electronic medical record: Digital equivalent of paper records

Care providers: Nurses who are working in a level III NICU

Handoffs: Is a transfer and acceptance of patient are responsibility achieved through effective communication (The Joint commission, 2012)

Shift report: Vital information about patient care and responsibility for the patient is provided from the off-going provider to the on-coming provider (Acosta et al., 2017)

Conclusion to Chapter

This chapter provided a background about handoff communication and the challenges health care providers face to give consistent and accurate information. This chapter also established the need to utilize a standardized electronic hand off tool to organize the content of information, reduce variability between health care providers and ensure that vital information is communicated during the handoff process in a consistent manner. Berlo's Dyadic Communication model provides a framework for establishing the structure and process which are essential to improving communication among providers and standardizing patient care handoff. For healthcare professionals working in the NICU using a standardized electronic handoff tool will enable healthcare providers use an evidenced based handoff methodology to improve patient

care and safety, reduce data transcription error, prevent missing critical information and exchange information in a standardized manner.

Chapter Two: Review of the Literature/Evidence

This chapter discusses the methods used to obtain the most pertinent and current literature for this quality improvement project. Chapter two also integrates, and critiques evidence related to the importance of this projects PICO statement. It is important to find evidence which supports the need for a practice change or process improvement. The literature review supports and reinforces the need for change presented in this project.

Ineffective handoffs can have serious implications to patient care and safety. Newborns in the Neonatal Intensive Care Unit (NICU) are vulnerable because of their size and immaturity. Infants born at 24-27 weeks are at the highest risk of adverse drug events because they stay longer and the chances for communication breakdown is more prominent with expanding length of hospital stay (Gephart,2012). Opportunities for communication breakdown can happen at shift change, when patients are relocated to another area or when those who oversee caring for the patient go on a break or if there is an adjustment in patient acuity. The Agency for Healthcare Research and Quality (AHRQ,2009) indicates that "patient information is lost during shift handoffs and recommends that handoffs be structured and preferably in electronic form". The Joint Commission, 2006 necessitates that all medical providers implement a standardized approach to achieve a more effective handoff correspondence including an opportunity to ask and react to questions. Shift hand offs are especially important to determine readiness for discharge and the necessary requirements for a safe discharge are completed such as immunizations, hearing, newborn screening and the car seat challenge for newborns born prior to 37 completed weeks.

The purpose of conducting a literature review is to look at the evidence that supports a standardized electronic tool for handoff communication in a NICU that can improve the

discharge process and patient safety. Other than improving provider communication, another added benefit for conducting a literature review is to support a reason to change current practice. Improving hand off communication offers an opportunity to teach the RNs the fundamental segments of quality handoff communication (Dyches,2014). Poor hand off communication has been related to inaccurate assessment and diagnosis, errors in medication administration and unfavorable client events (Johnson, Sanchez, &Zheng,2016). Standardized handoff protocols can improve the handoff format as well as provider, patient, and organizational outcomes (Keebler et al., 2016). Therefore, this literature review will also search for the best practices to improve shift handoffs.

Summary of the Evidence

There was little evidence that supported any specific protocol for hand offs or the use of an electronic hand off system. Literature on specific handoff in the NICU includes very few published studies. One article recommended replacing the written handoff with a standard auto-populated data to prevent errors (Derienzo, Lenfestey, Horvath, Goldberg, &Ferranti,2014). Palma et al, 2011 discovered that using a handoff instrument created by the Electronic Medical Record (EMR) in the NICU, providers were more encouraged, invested less time planning for sign out and felt that the precision of the information shared were upgrade. Another study looked the connection between implementation of the electronic handoff instrument and patient safety and discovered that the electronic patient hand off tools can increase provider satisfaction (Dyches,2014). In a study about patient care handoff after complicated general surgery, implementation of a standardized electronic tool enhances compliance, precision, work process efficiency and decrease communication errors (Clarke et al.,2017).

Using a structured checklist as a hand off to provide the transfer of information from nurse to nurse is a consistent theme throughout the literature. Another study showed the implementation of structured content, and an electronic handover instrument can enhance the viability of nursing handoffs and reduce the rates of mistakes (Johnson et al.,2016). Keebler et al, 2016 reviewed many studies to comprehend the effects of hand off protocols. This study used a statistical analysis to combine the results of multiple scientific studies to derive conclusions about research with respect to hand off protocols. The results indicated hand off protocols enhanced outcomes on many levels including hand off information passed among providers, patients and organizational results (Keebler et al., 2016). Protocols can enhance handoff information, system outcomes and positively affect outcomes in a variety of clinical settings (Keebler et al, 2016). In a pilot study, a handoff with core data elements can prevent written handoff errors and allow the health provider to focus with transition in care (Derienzo et al., 2014).

Poor communication of patient information during handoff has been suspected in unfavorable occasions and in one study, changes to handoff incorporated a minimum data set for an electronic patient summary tool and gave clinicians access to comprehensive information (Johnson, Jefferies, & Nicholls, 2012). In another study, alternative shift starts times contributed to the disorganization, poor communication as well as distractions and interruptions (Brown &Sims, 2014). Although this study did not use an electronic hand off, it did emphasize hand over practices to ensure that efficient quality information occurs between nurses in the NICU.

Theoretical Framework

Effective communication is important for a safe and effective handoff. The Communication Process Model, also referred as the Berlo's Dyadic Communication Model is chosen as the theoretical framework for this project because it supports the importance of standardized communication of patient care handoff (Patton et al., 2017). The Berlo's model has four components to describe the communication process. The components of this model are the sender, message, receiver, and feedback. The sender is invigorated to transmit a message and after that encodes and sends it. As the sender encrypts the message the collector must receive, interpret, and process the data as indicated by clarifying the message and provide any essential criticism or feedback (Patton et al., 2017). Effective communication requires similar language so that the message is clear for the receiver to understand the message and provide feedback. A standardized handoff tool will enable the sender and recipient to convey utilizing a similar language through a standardized procedure.

Review of the Literature

Methods

An examination of the literature served as the groundwork to establish whether using an electronic handoff positively improve the discharge process and patient safety outcomes as compared to a paper hand off tool. The review approach permitted inclusion of multiple variables and various methodologies, making it the most reasonable strategy for examination the literature pertaining to utilizing a standardized electronic hand off on communication and patient safety. The combined search terms of handoff tools, communication, NICU, quantitative research, nursing handoff, handover and electronic handoff were utilized. The articles were retrieved using the E.S. Farley Library data base and include the Cumulative Index to Nursing

and Allied Health Literature (CINAHL), and PubMed. Additionally, references from articles recovered from these databases were likewise used. The results were limited by date (2011 to 2017), content (scholarly and peer reviewed journal articles), English language, and relevance to purpose statement. Additional exclusion criteria included overlapping articles, non-healthcare professionals and editorials. Articles that were not related to implementation of a standardized guideline for hand off were not included in the review.

The inclusion criteria for this review were sources that included clinical studies of standardized clinical handoffs and implementation of a standardized electronic hand off. Titles, abstracts, and introductions were initially reviewed to determine if they met the inclusion criteria and justified a more critical observation. Selected articles were then read in full to identify how hand off was standardized using an electronic hand off tool. There were initially 32 articles for inclusion. The articles were reviewed and gathered into table of evidence summaries (see Appendix A). After application of the exclusion criteria, eleven articles were retained for this review from and were categorized into the following sections:

Gaps in Communication

Gaps in correspondence processes continue to exist, resulting in expanded susceptibility to patient safety (Chapman, Schweickert, Swango-Wilson, Aboul-Enein, & Heyman,2016). In Chapman's et al. 2016, nurse's satisfaction with communication of care, satisfaction with communication received were measured. A descriptive study configuration encouraged correlation of connections among the variables and nurse's view of satisfaction of using a digital instrument during handoff. This study was a convenience sample of 81 RNs. 46 surveys were completed with a participation rate of 57%. Detailed nurse satisfaction scores ranged from 72-

86%. In this study, 75% of nurses announced being happy with communication of patient care when utilizing an information technology (IT) tool. Another study designed a minimum data collection for a digital framework to enhance correspondence of patient data at handover (Johnson, et al., 2012). Information at handover was identified by adopting an observational approach and digital recordings in relation to a nursing handover minimum data set (NH-MDS). The information demonstrated that all handovers were composed by verbal correspondence utilizing a preprinted sheet developed by spreadsheets or printed documents. Preprinted sheets suggested that an electronic format outline was already considered required in most areas (Johnson, et al., 2012). Standardizing of information will improve patient safety by minimizing confusion and preventing gaps in conveying the information during hand off.

Understanding nursing handover during the middle of the shift is essential to guarantee continuity of care and reduce the potential for gaps in communication. The quality of information sharing and support during handover were investigated in a study that analyzed nursing clinical handover practices from the morning to the afternoon shift in a NICU (Brown & Sims, 2014).

Electronic Handoff Tools

A prospective intervention study of resident handoffs of inpatient surgical oncology patients evaluated miscommunication errors that have led to near-miss and patient harm events (Clarke et al., 2017). A standardized electronic handoff was created using the I-PASS methodology. The mnemonic (illness severity, patient summary, action list, situation awareness and contingency plans, and synthesis by receiver) I-PASS has been demonstrated to decrease medication mistakes and adverse events (Clarke et al., 2017). According to Clarke et

al. (2017), “Implementation of the structured electronic tool resulted in an increase in resident handoff compliance from 73% to 96% (P<.001) and decreased errors in communication by 50% (P= .044) while improving resident efficiency and workflow”.

Based on Johnson’s et al. (2012), content analysis the NH-MDS has the potential to be used in an electronic tool to complement structured content and generate summaries for nurses to use during handover. In another study by Johnson et al. (2016), there were no changes in falls or medication incidents when using an electronic hand off tool but there were increased documentation alerts such as falls and allergies within handover summaries. The handoff method with the highest percentage of satisfaction was using verbal handoff with electronic medical records (Yu, Lee, Sherwood, &Kim,2018).

Patient Safety

Keebler’s et al. (2016), used a meta-analytic approach to understand the effects of handoff protocols. This study described the standardized handoff process as one that executed a checklist, protocol, computerized sign-out, or mnemonic to aid in the handoff procedure among providers regardless of the type of handoff. The results of this study indicated positive results on handoff information (95% CI), provider outcomes (95% CI) and organizational outcomes (95% CI) (Keebler, el al, 2016). In another study, handoff evaluation showed a significant positive correlation with perception of patient safety culture (r=.59, p<.001) (Yu et al., 2018). Poor patient care handoff has also been associated with incorrect clinical evaluation and diagnosis, delays in diagnosis and medical errors. Reducing patient clinical mistakes using organized content and an electronic hand off instrument was evaluated in a study conducted by Johnson et al., 2016. This study analyzed whether the implementation of structured content and an

electronic handoff tool would enhance the idea of patient information and decrease patient adverse events (Johnson et al., 2016). A pre/posttest evaluative plan was utilized to acquire both content and self-reported incident data to address the study investigations posted (Johnson et al.,2016). This will diminish the opportunity for errors of transfer of information which can happen when using a paper instrument (Dyches, 2014). Dyches project, which was conducted in a Neonatal Intensive Care Unit, concentrated on enhancing provider satisfaction with an electronic hand off to improve patient safety (Dyches,2014).

Reducing patient clinical management errors using a structured content and electronic nursing handoff was also examined in the literature to see if the quality of information delivered during nursing handoff could improve patient safety. Johnson's et al., (2016) examined how using a structured content and in electronic tool within the patient clinical information system would improve the quality of information delivered at nursing handoff and reduce adverse patient outcomes. This study used a pre/posttest evaluative design to implement handoff changes to the content of nursing handover and patient incidents (Johnson et al., 2016). The results of this study showed no change in the falls rate after implementation of handoff changes and a significant decrease in the error rate after the implementation (Johnson et al., 2016).

Provider Satisfaction

Some of the obstacles to implementing electronic standardized instruments include staff resistance to change and the necessity to accommodate each tool to each individual unit to increase effectiveness (Dyches,2014). Dyches, (2014) conducted an electronic survey to allow RNs who are involved with patient hand off to communicate their satisfaction with the patient handoff that was received from the outgoing shift. Utilizing the Plan-Do-Act-Model, a

standardized electronic patient hand off was implemented to analyze the effect of patient safety to provider satisfaction. There were many parts to this intervention including a PowerPoint presentation which focused on increasing awareness and knowledge of the electronic tool. An electronic survey was then given out to assess provider satisfaction with the current paper form over a 3-week time period. Likert style questions were utilized to gather benchmark information and later to quantify the viability of the new process (Dyches, 2014). The outcomes were analyzed with occurrence reports during the same period if the occurrence were found to be handoff related occurrences (Dyches,2014). These results showed an increase in the occurrence rate with a 73% of the usage rate of the electronic tool due to the newness of the tool (Dyches,2014). In the post-intervention survey, there was a decrease in handoff related occurrence events and a 75% usage rate of the electronic tool (Dyches, 2014). In Patton's et al. (2017) study, nurses report obtaining more information of the patient's journey using a standardized handoff format and feeling a greater satisfaction.

Reconciliation of a NICU specific handoff tool into an electronic medical record (EMR) was found in the literature to enhance sign out accuracy and provider satisfaction (Palma et al., 2011). Prospective surveys of neonatal providers in an academic children's hospital 1 month prior and 6 months afterwards were assessed after implementation of a neonatal electronic handoff tool. Providers in this study perceived sign out information to be 91% accurate with the electronic integrated hand off tool (Palma et.al., 2011). Before the integration of the neonatal sign out into the EMR, 35% of providers were satisfied with a NICU handoff tool, following integration of the handoff into the EMR, 92% of providers were satisfied (Palma et.al., 2011). There was a slight increase in time spent updating information from 11-16 minutes with a

neonatal handoff tool and 16 to 20 minutes updating the EMR-integrated sign-out (Palma et. al., 2011).

Conclusion

There were a few limitations that were identified in the literature review. Chapman's (2016) study was limited to a non-randomized convenience sample from a single practice set. Palma's et.al. (2011) study, because the survey data is descriptive, was not possible to draw cause and effect conclusions based on the responses. The main study limitation in Brown's (2014) study was a small sample making it difficult to generalize the findings. Overall, the literature review was limited because there were very few studies that looked at electronic handoff to improve nursing handoff in a NICU.

This literature review contributes to an extensive clinical community by doing a comparison of available research findings in relation to nursing clinical handoff. It identifies gaps in the literature and areas of further investigation. There is a need for further research into neonatal nursing handover because of the constant changing and flexible nature of work practices (Brown & Sims, 2014). Implementation of a standardized clinical hand off are likely to improve compliance, promote quality of care and patient safety (Ahmed, Mehmood, Rehman, Ilyas, & Khan, 2012). This review also demonstrated a need for more studies in electronic handoff for nurses who take care of patients in the NICU.

These studies recommend that standardization of hand off instruments may eliminate conflicting patient information and enhance nurse satisfaction. The literature suggests that EMR integration has the potential to decrease documentation errors by reducing redundancy in documentation (Palma et.al.,2014). The literature has shown that using electronic hand off improves communication between nurses and the patient's quality of care are increased. The

literature also showed that in an acute care unit, utilizing a standardized electronic instrument improved communication, consistency, accuracy and proficiency of handoff communication between surgical residents (Clarke et al.,2017). Other recommendations found in the literature for future exploring include improving timing and efficiency of hand off and strategies to minimize distraction and interruptions during handoffs (Patton et al.,2017).

Providing a safe health care climate for patients must be the endorsement of healthcare for the future. By improving the process, the transfer of information among healthcare personnel, will be consistent and seamless. An electronic handoff can improve the discharge process by including an established plan for follow-up care that is clear and standardized. This will prevent unnecessary delays in hospital discharge. Nurses must aim to improve their communication skills not only during handoff but to other members of the health care team. This literature review shows the importance of electronic hand off instruments to improve communication, patient safety, and clinical practice the NICU.

Chapter Three: Method

This chapter details the study design and population plan along with the data collection measurement, tools and plans for analysis. In addition, this chapter provides an overview of the Institutional Review Board (IRB) process and organizational readiness for change.

Design

This study will be a prospective study. The study will take place in a level III NICU in Brooklyn, New York. Data collection will begin once the study has received Institutional Review Board Approval (IRB) from the facility where the study will be done and from Wilkes IRB. There are 75 nurses who will be invited to participate in the study. Nurses with all educational levels will be included. Staff nurses, per diem, floats, and travelers will be included. Health care workers who are not RNs will be excluded from the study. The first part of the study will begin with the PowerPoint presentation. This part of the study will take approximately 3 weeks for all nurses to be in-serviced on the I-PASS tool. It is anticipated to begin on July 1st. All participants in this study will receive a pre-test, an educational intervention, followed by a post-test. The I-PASS survey questions will be the instrument used as both the pre-test and the post-test. The ten survey questions are related to general knowledge about I-PASS. The answers to the questions are either true, false, yes, no or a, b or c. The last two questions are demographics which will be included at the end of the survey questions. The educational component will be a power point presentation. After the participants completed the pre-test and heard the educational presentation, they would complete the post-test which is the same as the pre-test. Once 80% of the staff have received the educational PowerPoint, the study will begin.

Population Plan

Sample

The population for this quality improvement project will be a convenience sample of registered nurses who work in a level III Neonatal Intensive Care Unit (NICU) in Brooklyn New York at the time of the study. The sample will be registered nurses who work in the NICU during the day and nightshift, 7 days a week, including weekends, nights and holidays.

Gatekeepers

The first gatekeepers, for purposes of this study, included the faculty at Wilkes University. In addition to faculty, the Wilkes Institutional Review Board and the Institutional Review Board where the study will occur will also serve as gatekeepers to ensure the study met proper ethical standards. Permission to perform this study in the Neonatal Intensive Care Unit (NICU) was obtained with the nursing manager and educational director. They also served as gate keepers for this study. The final gatekeeper in this study is the Chief Nursing Officer and the Vice President of Pediatric Nursing of the healthcare facility affiliated with the NICU.

Stakeholders

Organizational stakeholders include the assistant nurse manager, nurse manager, clinical nurse specialist and the healthcare staff of the NICU who may be affected by this project if adopted into the practice setting.

Procedural Plan

IRB process

This research study will be conducted only after Institutional Review Board (IRB) protocol review and approval is obtained from Wilkes University, where the study was

originated, and at a NYC hospital in Brooklyn where the I-PASS handoff will be implemented and studied.

Informed Consent

Prior to starting the quality improvement project (QI), a cover letter (Appendix A) will be given out to the nurses who work in the NICU at the hospital where this study will be taking place explaining the study. The cover letter with the pre and post survey questions will be given out by the principal investigator and will be placed in a yellow envelope labeled "Vivian's study, consent forms". The cover letter will explain and describe what will be involved in the quality improvement project. The benefits and risks will also be explained in the cover letter. This study presents no more than minimal risk of harm to the subjects and involves no procedures for which written consent is normally required outside the research context. It is anticipated that the study will be approved as a quality improvement project. There will be a 15-minute educational presentation on I-PASS, an electronic handoff tool. Prior to the education, there will be a short survey about the knowledge of I-PASS. After listening to or reading the PowerPoint Presentation about I-PASS, there will be a second survey that will serve as a post-test. The survey should take about 15 minutes. It will be asked of the participants to complete a data collection tool on each of the assigned patients that will be discharged during your shift. If the survey questions are completed, the participant has consented to the study.

It is reasonable to expect the following benefits from this research: An electronic tool to improve communication during nursing hand off which will promote patient safety and improve the discharge process. However, there is no guarantee that the participant will personally experience benefits from participating in this study. Others may benefit in the future from the information that will be found in this study.

Confidentiality

To maintain confidentiality, data files will be stored in a locked file cabinet in the Nurse Practitioners office. Access to research files will be limited to the investigators and the IRB. Infant identifiers will be used only for research purposes and will never be used in publication or identification.

In addition to providing standards for how identifiable health data is collected, stored, and utilized during research, the Health Insurance Portability and Accountability Act (HIPAA) impacts how protected health information can be used preparatory to research. There will be a waiver of consent to access records for chart reviews as there will no extraction of any identified protective information. In concordance with these standards, any information recorded during the process of identifying the records who are eligible for inclusion in this study will be deidentified. Alphanumeric coding will be used to protect the identity of the infant. Harvested patient data will be stored during the research study and will be deleted from the computer when the data is no longer needed. All data collection sheets will be shredded once the data has been entered in the computer and the study is completed.

Data Collection Plan

The first part of the data collection plan will be a collection tool that will list survey questions to assess the nurse's knowledge with I-PASS (Appendix B). I-PASS is a mnemonic that provides a framework for the handoff process (Starmer et al., 2012). This handoff tool was chosen as the framework to use for the study as this is the tool used at this facility for handoff. The NICU has not received the Inservice for IPASS. The survey questions will ask if nurses have heard of the I-PASS tool, why is I-PASS used, have they ever used it, and do

they believe it can improve clinical management as well as the discharge process. (Appendix B). The results of the survey will be collected anonymously and placed in a yellow envelope labeled “Vivian Study part 1” and kept in a locked and secure cabinet. There will be a separate sign-in sheet with the nurse’s name to indicate that they completed the study. A PowerPoint presentation about I-PASS will follow the survey. Educating the staff on the essential components of a quality handoff communication using a handoff tool such as I-PASS will enhance communication (Dyches,2014). This will also ensure compliance in using the tool during handoff. In addition to the survey questions, the data tool will also include gender, age, education and years of experience. After the educational presentation, a post test will be administered to see if there has been knowledge gained. The post test questions are the same as the pre-test questions.

To avoid bias, the PI will have someone distribute and collect the survey and place the survey in the yellow envelope before and after the educational presentation is completed. There will be no identifying information in the survey in order to keep the survey anonymous. The only identifying information will be for the educational presentation. The nurse’s names will be checked off after they received the education. The education will be open to all NICU nurses working the unit at the time of the study for 3 weeks and will cover both the day and nighttime shift.

Another data collection tool will be a master list where the protected health information (PHI) is contained, and a unique identification number for each patient is assigned on the collection form (Appendix C). Only the principal investigator (PI) will have access to this collection form. The charge nurse will have a list of patients that will be discharged for home that day. The nurse who will have a patient that is scheduled for

discharge will be given a data collection tool (Appendix D). This data collection tool includes the criteria needed for discharge. Each patient will be given a unique identification number. If the patient is discharged after 2 pm, it will be labeled as a delayed discharge and the reason will be indicated. If the reason for the delay does not include the final criteria, it will be listed as "other" with an explanation. This list will be collected by the charge nurse and placed in a yellow envelope labeled "Vivian's Study part 2" and kept in a locked secured cabinet.

During the time of the study, retrospective occurrence reports of the previous 3 months will be reviewed for any reports that could be related to communication breakdowns such as missed medication, failure to complete a task or failure to follow orders. These occurrence reports will be compared with occurrence reports that may occur during the study for any trends related to communication breakdowns and patient safety.

Organization readiness

According to Melnyk and Fineout-Overhold (2015), strong leadership is a necessity in order to transform the culture that welcomes change and evidence-based practice. A quality driven culture is necessary for successful implementation of any innovative project. Readiness for change requires consistent leadership, actions, and information sharing to encourage participation (Weiner,2009). The nurse manager, assistant nurse manager and clinical nurse specialist in the NICU are very supportive and dedicated to any innovation that encourages better care and patient safety. Strong leadership is important to the organization's readiness for change. The scholarly project also has support from the nursing staff who are very enthusiastic about having an electronic handoff. There is also the support from the

information technology department which will be crucial in the transition to the electronic handoff from a paper handoff tool that will be used during shift report. Healthcare organizations are faced with constant changes in technology and social demands (Al-Hussami, Hamad, Darawad, &Maharmeh,2017). This quality improvement project will show the possible impression that electronic handoff tools have on communication, clinical practice, hospital discharge, and patient safety.

Challenges to Implementation

As previously mentioned, nurses should be using a standardized method when giving hand off. There is a general handoff in the electronic medical record which is currently not applicable for NICU patients and there have been no in-services offered to the nursing staff on how to apply the electronic hand off when giving report to the oncoming shift. The current hand off that is being used does not give a background of the patient, events leading up to admission or hospital course. It does not include situation awareness and contingency planning. The most important challenge to implementation of the proposed change will be to the nursing staff. This may be because of a lack of knowledge an understanding of the I-PASS tool. The educational presentation proposed in this study will provide staff with knowledge of the I-PASS tool. It is anticipated that this knowledge will encourage nurses to use the tool.

Organization Expected Outcomes

The overall expected outcome will be to improve patient care and safety, reduce data transcription error, prevent missing critical information and to exchange information in a standardized manner. This outcome is related to the educational intervention that will be used in this study. There will also be a review of the occurrence reports that will begin after the educational presentation during the months of June and July for errors related to patient care and

safety. This data will be compared with the occurrence reports filed 3 months prior to the beginning of the study to see if there is a trend. It is also expected that there will be less occurrence reports related to poor communication and patient safety once the electronic handoff tool is implemented. It is also expected that there will be less delays in hospital discharge due to implementing the I-PASS hand off tool.

Data Analysis Plan

Wilcoxon signed rank test will be used to compare changes in scores for participants of the pretest and posttest of the educational intervention. The statistical program SAS version 9.4 program will be used for all data analysis procedures.

Conclusion to Chapter

This chapter provides an overall description of the design plan for this quality improvement study. Key gatekeepers were reviewed along with a detailed description of the procedure and IRB process. The sample for this quantitative pilot study will be registered nurses who work in the NICU. A description of the design was also discussed. The PowerPoint presentation was also described. The data collection tools are provided to assess the nurse's knowledge about I-PASS and to determine where there could be delays in hospital discharge.

Chapter four: Results

This quality improvement study is a scholarly inquiry on the effectiveness of the elements of an electronic communication tool to positively improve the discharge process and patient safety outcomes as compared with a paper handoff tool among neonatal healthcare providers working in a level III Neonatal Intensive Care Unit (NICU). Chapter four describes the data results and analysis of the scholarly project implementation using signed rank test to compare changes in scores for participants of the pretest and posttest of the educational intervention.

Upon completion of the project, data from pre-and post- surveys were entered into SAS database for analysis. Data analysis using the Wilcoxon signed-rank test was used to determine if there was a statistically significant change in the score of the pre- and post-test surveys. The purpose of this chapter is to provide an explanation of the results of the analysis. SAS version 9.4 was utilized to conduct the data analysis. The end of this chapter will present a summary of the results as an analysis to address the objectives of the study.

Analysis of Data Outcomes

Characteristics of the sample. The convenience sample consisted of a total of 60 registered nurses working in a level III NICU. Only regular staff nurses working in the NICU were invited to participate in the study. All RNs in the NICU were required to attend the educational PowerPoint presentation about the I-PASS handoff tool. Attendance was captured on a separate sign-in sheet to ensure all RNs in NICU received the education. Participation in the study was voluntary. 60 nurses completed the pre and post surveys and attended the educational PowerPoint presentation. Each RN received a yellow envelope containing a cover letter explaining the QI project and containing socio demographic questionnaires the pre- and post-

survey questions. Survey questions were Likert style questions regarding RN knowledge about I-PASS. Participation in the study portion of the project was voluntary. Return of the surveys and return of the demographic questionnaire constituted consent to participate. Sixty nurses completed the pre- and post- surveys and attended the educational PowerPoint presentation.

Analysis of Pre and Post Survey Scores

Table I shows each question in the test and its side-by-side comparison of answers pre versus posttest. There was an overall difference in the pre-test score versus the post-test score particularly in question #2, "What does I-PASS stand for". The pretest score was subtracted from the post-test scores to establish the difference and used the Wilcoxon sign rank test to determine if there was a statistically significant increase in score (see Table 2). A statistically significant increase in test score of about one point, ($p<0.0001$) was noted in the second question about previous knowledge about I-PASS. In the first question "What handoff have you used before", 81% of the nurse participants used SBAR as their hand off tool. In the second question, only 50% of the nurses knew about I-PASS as a hand off tool. This question helped determine how much education was needed about I-PASS. The other questions helped the PI determine how receptive the nurses would be in learning about I-PASS if they felt that it could standardize hand off, improve the discharge process, and decrease medical errors. Over 95% of the nurses agreed that using I-PASS can improve discharge timing and decrease medical errors (See Figure 1). The rest of the questions focused on whether nurses felt that a standardized handoff tool would improve the discharge process and patient safety. Over 95% of the nurses agreed both pre and post education that a standardized handoff tool would improve the discharge process and patient safety.

Summary of Findings

There was an increase in knowledge about I-PASS from 50% to 95% after the nurses received education about I-PASS (see Figure 1). The educational PowerPoint was an effective method of improving nurses' knowledge about I-PASS and emphasizes the importance of handoff accuracy as it relates to patient care. The difference in the pre- and post-test scores demonstrates a statistical significance ($S= 271$, $p<.00001$). The Wilcoxon signed rank test showed that there was a statistically significant increase in score (see Table 2).

Conclusion to the Chapter

The purpose of this quality improvement study is to determine if using a structured electronic handoff can improve the discharge process and patient safety outcomes. There was no data analysis to show if using a structured electronic hand off can prevent delays in hospital discharge because the discharge criteria was not able to populate to the handoff. The analysis results that were obtained showed that an educational PowerPoint presentation about I-PASS does show an increase in the rate of educational knowledge scores. In addition, there were more correct responses in question 2 in the post survey than the pre survey responses. Overall, the nurses were receptive to learning about I-PASS which was showed in the improvement in test scores after they received the education. Educating the RNs about I-PASS as a method of handoff, can the quality of the exchange in information and likely enhance patient safety.

Chapter 5: Discussions and Conclusions

This final chapter of the scholarly project begins with a brief discussion related to the essential components discovered during the process of completing the quality improvement project. The chapter will also address the Essentials of Doctoral Education for Advanced Nursing Practice as fulfilled by the project under investigation. In addition, the chapter will address implications for practice along with limitations. Finally, the chapter will conclude with recommendations for future research based on the findings revealed from the scholarly project.

Discussion of Main Findings

The intent of this quality improvement project was to investigate if using a structured electronic handoff tool prevented delays in hospital discharge. The support of this study included pre- and post-surveys and an educational presentation about I-PASS. The surveys included questions that helped determine the level of RN knowledge about I-PASS. Additional questions helped the PI determine how receptive the nurses would be in learning about I-PASS, if they felt that it could standardize hand off, improve the discharge timing and decrease medical errors. Previous studies have found that standardized handoff tools can improve sign-out accuracy, improve workflow and minimize handoff failures among healthcare providers (Meisel, & Smith, 2015; Palma, Sharek, & Longhurst, 2011).

After the educational presentation during this QI project, participants scored significantly higher in the question about previous knowledge of I-PASS. This demonstrated that there was a lack of knowledge prior to the educational presentation. The statistical differences in the responses after the educational presentation was ($p<.00001$). The benefit in using I-PASS is to have a standardized handoff process that ensures quality and safe care for all NICU patients. The nurses believed that using a standardized handoff will also improve the quality in both written

and verbal exchange of information during handoff. I-PASS can also prevent ineffective communication and documentation errors to enhance patient safety. Using I-PASS as a checklist ensures that all the information about the patient is included in an organized manner.

Implications for Practice

Based upon the findings of this study, improving handoffs through education are needed for effective handoff of information to promote patient safety (Soo-Hoon, Phan, Dorman, Weaver, & Pronovost, 2016). The results of the pre- and post-survey indicated an improvement in knowledge about I-PASS. It will be beneficial to follow up to see if using a structured handoff such as I-PASS will prevent delays in hospital discharge and improve patient safety outcomes.

The Essentials of Doctoral Education for Advanced Nursing Practice consist of eight critical areas or preparation for doctorally prepared nurse practitioners (AACN,2006). Appendix D of this paper is the crosswalk of scholarly paper outcomes which illustrates how each of the eight essentials are used throughout the written chapters of this quality improvement project.

Essential III involves research and analysis. The foundation for this evidenced-based project included an extensive investigation into the issue alongside a basic evaluation of the literature identified with the topic under examination. It was then important to investigate the findings and assess how to adequately execute a training change. This essential also focuses on patient safety as it relates to effective handoff of patient information. Practice change links closely with Essential V which addresses health care policy. This quality improvement project sought to implement a structured electronic handoff to prevent delays in hospital discharge. Leadership in policy was demonstrated at the unit level.

Essential VI focuses on interprofessional collaboration. Collaboration among nurses and leadership are needed for an effective discharge process (Goldman et al., 2018). This quality improvement project involved other team members to assist in integrating the NICU handoff onto the electronic health record. There was also support from the clinical nurse specialist and clinical managers of the project to improve the quality of nursing handoff. Collaboration among healthcare professional was essential in this project and is elemental in the fulfillment of Essential VI.

In addition to interprofessional collaboration this scholarly project required organizational leadership which is addressed in Essential II. Key skills include the development of clinical practice guidelines, designing evidence -based interventions and evaluating practice outcomes. This quality improvement project attempted to improve the quality of structured handoff by developing an electronic handoff to improve communication and shorten the discharge time in the NICU. Making a change and improving patient care handoff is an example of this important essential. It was fundamental for this investigator to search out current leadership in the organization and work inside the framework to achieve this significant doctorate essential.

Limitations

There were many limitations with this project as many of the items could not populate to the I-PASS handoff from the current electronic medical record. It was discovered while providing the education for this project that many of the discharge criteria could be entered into the electronic medical record from several places in the electronic medical record. This created a problem in streaming the items to the handoff section. Another limitation was that this project

was not able to show if using a structured electronic handoff can prevent delays in hospital discharge, but it was able to address some of the processes that are necessary for the transfer of patient information. There was no standardized tool in the literature that assessed nurse's knowledge about I-PASS, therefore one was developed using Likert style questions. One of the greatest difficulties was engaging the nurses to listen to the PowerPoint presentation, mainly due to the busy nature of the unit at the time of the study. The education was only provided at one point in time. This could have created problems for health professionals to familiarize and fully understand the process of using I-PASS.

A further limitation relates to the demographic characteristics of the participants. Only staff RNs were invited to participate in the study. There are nurses who float other units and per diem RNs who also work in the NICU. Not including all nurses who work in the NICU made it difficult to generalize the results since the sample was not represented in an even distribution.

Recommendations for Future Research

Continual research to determine best practices regarding patient safety are needed as the use of electronic hand off tools' increases. This quality improvement project introduced the use of a structured electronic hand off tool as a method of exchanging information during handoff and improving discharge times. This project was not able to show if using a structured electronic handoff tool can improve in the discharge process, but it did address the need for a standardized communication tool to transfer patient information.

Future studies could also investigate human factors, such as stress and fatigue, as they could affect the quality of patient care handoff. Studies have shown many benefits from the use of a structured patient care handoff, including staff satisfaction, reduction in time spent in

handoff, improved prioritization, and reduction in patient care incidents such as missed medication or errors in patient care management. Future research should also focus on health care providers' perception of barriers to using I-PASS/standardized electronic handoff as well as other issues affecting timely discharge. If health care providers had a better understanding of using a structured handoff tool, perhaps they would be able to anticipate discharge needs earlier.

Future research may also involve multiple units and a larger sample of participants. It would be beneficial to assess the effectiveness of handoff mnemonics in different patient care situations such as admissions, transfer to other facilities and during procedures. Identifying the best implementation strategies to improve patient outcomes will minimize errors and enhance the handoff process. Finally, working more closely with the information technology department can improve in the information transfer onto the electronic handoff tool.

Conclusion to Chapter

The findings from this scholarly project demonstrated that nurses agree that using a standardized handoff tool can improve clinical management and be an effective sign-out tool. This study also established the need for future research regarding discharge delays and transfer of information. -In order to continue with this study, it will be necessary for the NICU to maintain strong organizational leadership along with interprofessional collaboration. The findings from this project will offer an opportunity to continue with the quality improvement project in pursuit of ongoing evaluation and improvement of patient care discharge in the NICU.

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Table 1. Question Responses by time period

Question	Value	Pre-Test		Post Test	
		n	%	n	%
What handoff tool have you used before	I-Pass hand off bundle	3	5	8	13.33
	SBAR hand off tool	49	81.67	47	78.33
	Patient hand-off/overtook kit	7	11.67	5	8.33
	smart sign out	1	1.67	0	0
What does I-Pass stand for	Illness severity, patient summary, action list, situation awareness and synthesis by receiver	30	50	57	95
	intent, plan, activity, safety, system	23	38.33	3	5
	injury, patient, assessment, status, support	7	11.67	0	0
Requirements by Joint Commission question	TRUE	59	98.33	60	100
Belief in standardized approach for handoff communication	TRUE	60	100	60	100
When to implement I-Pass	When planning for discharge	1	1.67	1	1.67
	Whenever you are handing off a patient	6	10	4	6.67
	All of the above	53	88.33	55	91.67
Do you believe that a standardized handoff can improve clinical management	Yes	58	96.67	58	96.67
Standardized handoff is an effective sign out tool	TRUE	58	96.67	58	96.67
Do you think patients will be discharged faster	TRUE	48	80	57	95
Do you think there will be a decrease in medical errors	TRUE	54	90	58	96.67

Do you think guidelines should focus on the sign-out method	TRUE	59	98.33	58	96.67
Years of experience	0-5 years	15	25	15	25
	6-10 years	11	18.33	12	20
	10-15	16	26.67	16	26.67
	16-20	5	8.33	5	8.33
	More than 20	13	21.67	12	20
Education level	Associate	4	6.67	3	5
	Bachelors	49	81.67	48	80
	Masters	7	11.67	9	15

Table 2.

Mean Score by Time Period

	Pre-Post		Wilcoxon Signed-Rank
	Median (25^{th}-75^{th})	Median 25^{th} -75^{th}	P-value
Score	8 (7.5-9)	9 (9-9)	*<0.0001*

Figures

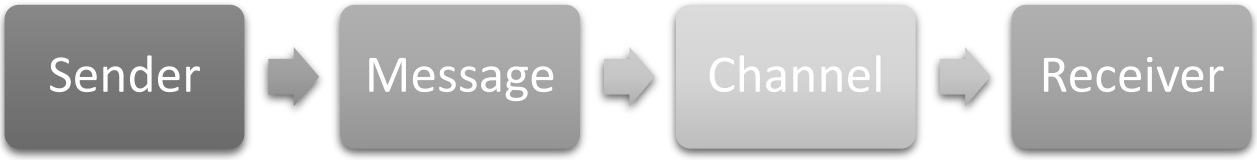

Figure 1: Berlo's Dyadic Communication Model: This figure illustrates the stages of the model.

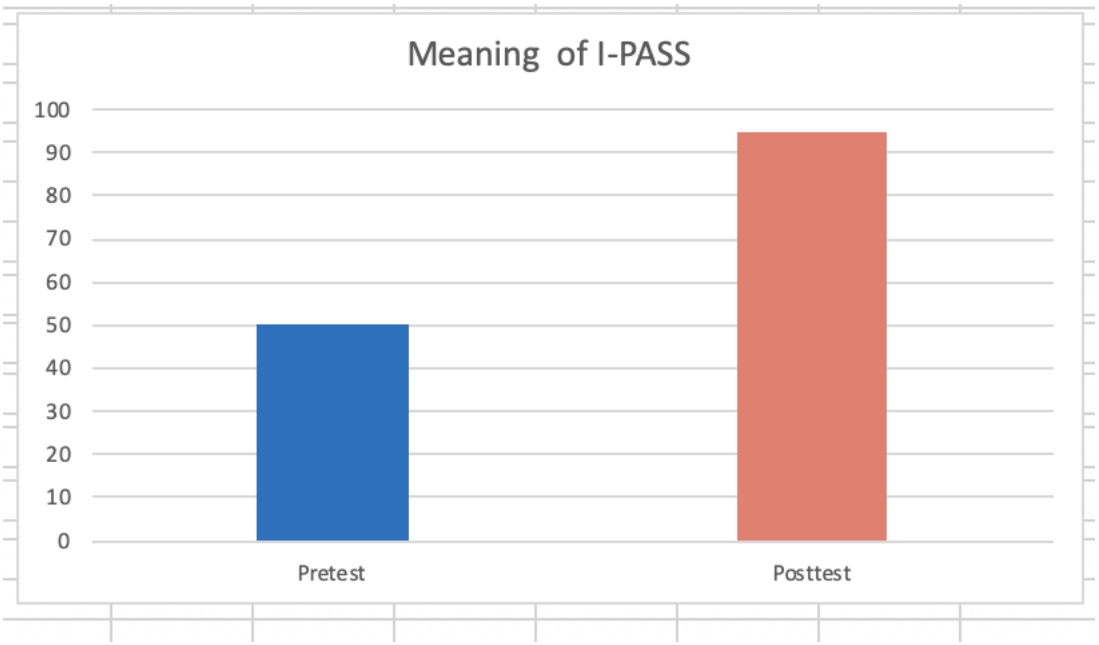

Figure 2: This figure represents the results of the pre-test and post test scores from the PowerPoint presentation.

Appendix A: Wilkes University IRB Approval

Wilkes University IRB *Exempt Determination Notification*

To: Vivian Lopez
From: Wilkes University IRB
Subject: IRB Exempt Determination - 52: Using a Standardized Electronic Hand off communication tool in a Level III NICU to provide patient safety and improve the discharge process
Date: 06/17/2019

The Wilkes University IRB has reviewed the application **52: "Using a Standardized Electronic Hand off communication tool in a Level III NICU to provide patient safety and improve the discharge process"** and determined that it is **Exempt** from IRB review according to 45 CFR 46.104(b)(3) on 06/17/2019.

Please note that any changes to your protocol may affect its exempt status. Contact the IRB at IRB@wilkes.edu to discuss any changes you may wish to make.

Thank you.

Wilkes University Institutional Review Board

Dr. Jin Joy Mao, IRB Co-chair
Associate Professor of Education
jinjoy.mao@wilkes.edu
(570) 408-7387

Dr. Chris Zarpentine, IRB Co-chair
Assistant Professor of Philosophy
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Appendix B: Agency IRB Approval

Maimonides Medical Center

IRB/Research Committee

MEMORANDUM

DATE: April 23, 2019

TO: Vivian Lopez, MSN, PNP, NNP

CC: Thomas Smith, PhD

RE: IRB Determination for 2019-04-04 - Using a Standardized Electronic Hand off communication tool in a Level III NICU to provide patient safety and improve the discharge process

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On April 23, 2019, the Designee of the Maimonides Medical Center IRB reviewed and acknowledged the receipt of the following materials: Data Acquisition x Form.

The following determinations were made: The proposed project does not meet the definition of human subject research and therefore does not require further IRB review.

If the circumstances of this project change, please contact the IRB Office for additional instructions.

If you have any questions, please direct questions to the IRB at IRB@maimonidesmed.org.

William Solomon, M.D.
Chairman, IRB

Appendix C: Participation Information and Consent Form

PROJECT TITLE: Using a Standardized Electronic Hand off communication tool in a Level III NICU to provide patient safety and improve the discharge process.

PRINCIPAL INVESTIGATOR
Vivian Lopez, RN, MSN, PNP, NNP-BC

Department: Pediatrics

Maimonides Medical Center/ NICU

INTRODUCTION

The use of a standardized electronic handoff tool is required by the Joint Commission and has been shown to improve the discharge process and increase patient safety, with an opportunity to ask and respond to questions, increasing situational awareness.

WHAT IS INVOLVED IN THE PROJECT?

You will be given a 15-minute educational presentation on I-PASS, an electronic handoff tool. Prior to the education, you will be asked to complete a short survey about your knowledge of I-PASS. After listening to or reading the PowerPoint Presentation about I-PASS, you will be asked to complete a second survey that will serve as a post-test. The survey should take about 15 minutes. You will also be asked to complete a data collection tool on each of your assigned patients that will be discharged during your shift.

RISKS

We anticipate that there will be no risk in participating in this quality improvement project.

BENEFITS OF THIS PROJECT?

It is reasonable to expect the following benefits from this quality improvement project: An electronic tool to improve communication during nursing handoff. However, we can’t guarantee

that you will personally experience benefits from participating in this study. Others may benefit in the future from the information we find in this study.

CONFIDENTIALITY

The following steps will be taken to keep all information private, and to protect from unapproved exposure, altering or harm. Surveys will be collected and placed in a yellow envelope and will be kept in a secured locked cabinet. The investigator will be the only one who will have access to the study. For the purposes of this research study, your comments will be anonymous. Please do not write any identifying information on your survey. Every effort will be made by the researcher to preserve your privacy including the following:

- Assigning code names/numbers for participants that will be used on all research notes and documents.
- Notes, and any other identifying participant information in a locked file cabinet in the personal possession of the researcher.

Once the study is completed, the surveys will be shredded.

YOUR RIGHTS AS A PARTICIPANT IN THIS QI PROJECT

Your participation is appreciated and feedback regarding this project is encouraged.

CONTACTS FOR QUESTIONS OR PROBLEMS?

Call Vivian Lopez at 718-781-6906 or email vlopez@maimonidesmed.org for any questions about the quality improvement project

Appendix D: Survey Questions

1. What other handoff tools have you used before? (Check all that apply)
   a) I-PASS hand off bundle.
   b) SBAR hand off tool.
   c) Patient Hand-off/Over Tool Kit
   d) Smart Sign Out
   e) Safer Sign Out

2. What does I-PASS stand for?
   a) Illness severity, patient summary, action list, situation awareness and synthesis by receiver
   b) Intent, Plan, activity, safety, system
   c) Injury, patient, assessment, status, support

3. It is a requirement by the Joint Commission for all health care providers to "implement a standardized approach to handoff communications including an opportunity to ask and respond to questions."
   a) True
   b) False

4. Do you believe that using a standardized approach to handoff communication will provide interactive communications, up-to-date and accurate information, limited interruptions, a process for verification and provide an opportunity to review any relevant historical data?
   a) True
   b) False

5. When do you implement I-PASS?
   a) When planning for discharge
   b) When going off the unit for a break and you must give report to another nurse
   c) Whenever you are handing off a patient
   d) All the above

6. Do you believe that a standardized handoff can improve clinical management?
   a) Yes
   b) No

7. Do you think a standardized handoff is an effective sign out communication tool and can improve the quality of nursing handoff?
   a) True
   b) False

8. With consideration, do you think patients will be discharged faster from the unit with implementation of a standardized hand off tool?
   a) True
   b) False

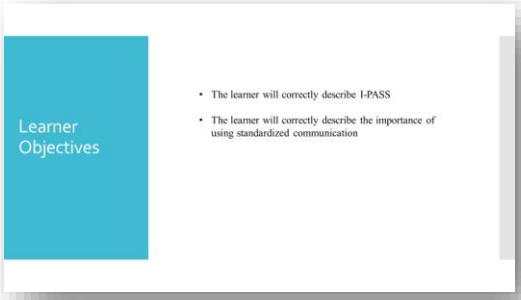
9. Do you think there will be a decrease in medical errors with the utilization of a standardized handoff tool?
    a) True
    b) False

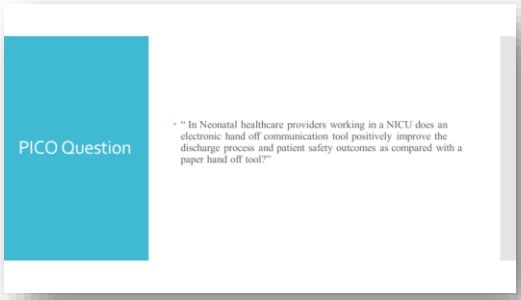
10. Do you think guidelines for a safe handoff should focus on standardizing the sign out method?
    a) True
    b) False

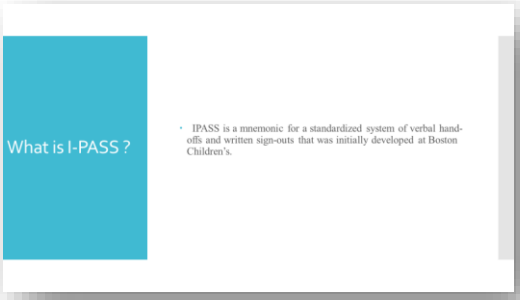
11. Years of Experience
    a) 0-5
    b) 6-10
    c) 11-15
    d) 16-20
    e) More than 20

12. Education
    a) Associate
    b) Bachelors
    c) Masters
    d) Doctorate

Appendix E: PowerPoint Education







USING A STRUCTURED ELECTRONIC HANDOFF

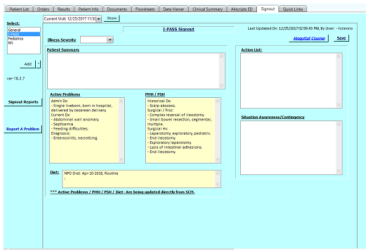
Survey Questions

- 1. What does I-Pass stand for ?
- 2. Have you ever used the hand-off tool, I-Pass?
- 3. It is a requirement by the Joint Commission for all health care providers to "implement a standardized approach to handoff communications including an opportunity to ask and respond to questions" (T/F)
- 4. Using a standardized approach to handoff communication will provide interactive communications , up-to-date and accurate information ,limited interruptions , a process for verification and provide an opportunity to review any relevant historical data (T/F)

Survey Questions (Cont.)

- 5. When do you implement I-PASS?
- 6. Do you think a standardized handoff can improve clinical management? (Y/N)
- 7. The I-PASS format is considered the gold standard for effective sign out communication and can improve the quality of nursing handoff. (T/F)
- 8. With consideration to time, will patients be discharged faster from the unit with implementation of a standardized hand off tool? (T/F)
- 9. Will there be a decrease in medical errors with the utilization of a standardized handoff tool ? (Y/N)
- 10. Guidelines for a safe handoff should focus on standardizing the sign out method (Y/N)

Electronic integration for sign-off



I-PASS

I	Illness Severity	• Stable, "watcher," unstable
P	Patient Summary	• Summary statement • Events leading up to admission • Hospital course • Ongoing assessment • Plan
A	Action List	• To do list • Time line and ownership
S	Situation Awareness and Contingency Planning	• Know what's going on • Plan for what might happen
S	Synthesis by Receiver	• Receiver summarizes what was heard • Asks questions • Restates key actions/to do items

Goals

- To have a standardized sign out system to ensure quality and safe care for all NICU patients
- To improve the quality in both the written and verbal exchange of information during handoff
- To prevent ineffective communication and documentation errors to enhance patient safety.
- To use the electronic hand off as a checklist to ensure that all the information about the patient is included in an organized manner.

References

- Dyches, R. (2014). Implementation of a Standardized, Electronic Patient Hand Off Communication Tool in a Level III NICU. *On - Line Journal of Nursing Informatics, 18*(2).
- Starmer, A. J., Spector, N. D., Srivastava, R., Allen, A. D., Landrigan, C. P., & Sectish, T. C. (2012). I-pass, a mnemonic to standardize verbal handoffs. *Pediatrics, 129*(2), 201-204. doi:10.1542/peds.2011-2966

Appendix F: Crosswalk of Scholarly Project Outcomes
Wilkes University
Passan School of Nursing
Doctor of Nursing Practice

DNP Essentials	Chapter 1: Introduction and Overview of the Problem	Chapter 2: Review of the Literature & Evidence	Chapter 3: Method	Chapter 4: Results	Chapter 5: Discussion and Conclusions
I Scientific Underpinnings for Practice	Pages 1-4	Pages 7-15	Pages 23-25	Pages 26-27	Pages 29-33
II Organizational and Systems Leadership for QI and Systems Thinking	Pages 1-3	Pages 8-9	Pages 18-21	Pages 28	Pages 31-31
III Clinical Scholarship and Analytical Methods for Evidence Based Practice	Pages 3	Pages 10-15	Pages 19	Pages 26-28	Pages 29-33 &32
IV Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Healthcare	Pages 1-2	Pages 10 & 12	Pages 19,21-22	Pages 28	Pages31 & 32
V Healthcare Policy for Advocacy in Healthcare	Pages 4-5	Pages 7-9,13-14	Pages 21-25	Pages	Pages 33
VI Interprofessional Collaboration for Improving Patient and Population and Health Outcomes	Pages 4-5	Pages 13-16	Pages 18-19 & 25	Pages 28	Pages 31,32-33
VII Clinical Prevention and Population Health for Improving the Nation's Health	Pages 1-3	Pages 8-15	Pages 18	Pages	Pages 31-33
VIII Advanced Nursing Practice	Pages 3-5	Pages 14-15	Pages 18-19	Pages 26-28	Pages 29-31,32-33