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The Hurdles of the Handoff: A Study of why PICU Nurses are not Utilizing the Handoff Tool and how to Improve Utilization

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Background: Adverse patient events have been linked to communication errors during handoff. The Joint Commission has estimated that 65% of adverse patient events are associated with issues in communication. This, coupled with mandated electronic medical record (EMR) adoption in 2009, has complicated the implementation of effective handoffs. Many EMR systems are ill equipped to provide effective handoff tools, leading to staff non-compliance and a system of varied handoff procedures.

Purpose: To determine the barriers to nurses utilization of the EMR based handoff tool in the pediatric intensive care unit (PICU).

Methods: This study was a longitudinal pre-post analysis design, aimed at highlighting nursing staff likes and dislikes of the current EMR based handoff tool in the PICU. Using the pre-test data, a quality improvement (QI) project in the form of an in-service that provided handoff tool "cheat sheets," was implemented to improve usability of the handoff tool and communication during change of shift report. A post-project survey was issued two months after the implementation of the QI project, to re-evaluate staff perceptions of the handoff tool/change of shift report. Pre and post hand-off tool use data was provided by unit management.

Results: The results and implications of this study are confidential protected information with the collaborating institution. The analysis and presentation of the results as well as the implications for this study was disseminated to the supervising St. John Fisher faculty and the collaborating institution and as was found to meet accepted guidelines for successful completion of the project for the purposes of completing degree requirements.

Conclusion: Current handoff tool literature shows that staff will willingly use handoff tools that are user friendly and well integrated into the EMR, but will abandon the use of tools that are not. Improving handoff tool use in the PICU could lead to improved communication, organization, and time spent giving report; thus impacting patient safety by avoiding adverse events related to communication errors. Future research and QI projects should focus on how to engage staff to be more compliant with actually using the handoff tool.

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The Hurdles of the Handoff: A Study of why PICU Nurses are not Utilizing the Handoff Tool and how to Improve Utilization

By

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Submitted in partial fulfillment of the requirements for the degree

Master's in Advanced Practice Nursing

Supervised by

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Wegmans School of Nursing

St. John Fisher College

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Abstract

Background: Adverse patient events have been linked to communication errors during handoff. The Joint Commission has estimated that 65% of adverse patient events are associated with issues in communication. This, coupled with mandated electronic medical record (EMR) adoption in 2009, has complicated the implementation of effective handoffs. Many EMR systems are ill equipped to provide effective handoff tools, leading to staff non-compliance and a system of varied handoff procedures.

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Conclusion: Current handoff tool literature shows that staff will willingly use handoff tools that are user friendly and well integrated into the EMR, but will abandon the use of tools that are not. Improving handoff tool use in the PICU could lead to improved communication, organization, and time spent giving report; thus impacting patient safety by avoiding adverse events related to communication errors. Future research and QI projects should focus on how to engage staff to be more compliant with actually using the handoff tool.

Patient handoff, handover, or change of shift report, are all synonymous terms that describe the concept of the transfer of patient care from one clinician to another. This is a process that has been occurring in health care since the beginning of organized medicine, but has received increased attention in the past few years due to the link between poor communication and adverse patient events. Handoffs require that a large quantity of information be shared over a relatively short period of time, occur multiple times per day, and between multiple disciplines. In both the United States and abroad, safety commissions, such as The Joint Commission (TJC) and the Australian Commission on Safety & Quality in Health Care have made standardized handoff tools a requirement in an effort to decrease communication errors. Other organizations including the World Health Organization and the Society of Hospital Medicine have also created recommendations on patient handoffs. The Joint Commission estimates that 65% of adverse patient events can be linked to errors in communication (Anderson, Malone, Shanahan, & Manning, 2014; Cornell, Gervis, Yates, & Vardaman, 2013; Patterson & Wears, 2010). In the United States, the required implementation of electronic medical records (EMR) starting in 2009, has further complicated the handoff process. Many systems do not support handoff tools at all, or the EMR based handoff tools that are available are not user friendly/useful, thus leading to user non-compliance amongst nursing staff and providers (Panesar, Alberty, Messina, & Parker, 2016; Staggers, Clark, Blaz, & Kapsandoy, 2012).

Background/Significance

Patient handoffs and transitions of patient care have become the focus of increased attention over the past few years. As institutions and safety commissions seek to improve the quality and safety of patient care, these transitional periods have been highlighted as critical

points in communication. By definition, according to TJC Center for Transforming Healthcare, a successful handoff is

> …a transfer and acceptance of responsibility for patient care that is achieved through effective communication. It is a real-time process of passing patient-specific information from one caregiver or team to another to ensure the continuity and safety of that patient's care. (Kear, 2016, pp. 339)

It is estimated that 20-30% of the information that is communicated during a handoff is not documented in the patient chart; the potential effects of poor handoffs are vast (Patterson & Wears, 2010). The projected impact of sub-par handoffs include adverse patient events, longer hospital stays, increased cost, delays in care and diagnosis, redundant communication and activities (e.g. procedures, labs, tests), and decreased patient and provider satisfaction (Patterson & Wears, 2010).

In 2006 TJC made the implementation of a standardized approach to patient handoff a requirement for all health care providers. Guidelines for these handoffs include: interactive communication, up-to-date and accurate information, limited interruptions, a process to verify all information, and time to review relevant historical data (Kear, 2016). Since this time many institutions have struggled with user compliance of these tools and many questions surrounding handoff tools have surfaced: what is the best approach to the handoff tool?; what do staff want from the handoff tool to make it user friendly?; do these tools really improve patient safety?; and how does a standardized handoff tool impact change of shift report? An extensive literature search was completed to examine handoff tool research and to determine the effectiveness of these handoff tools and where improvements should be made.

Published research in which the aim was to assess the impact of handoff tools on change of shift report, handoff tool effects on patient safety, or barriers to handoff tool use were included in this literature review. Twelve articles were ultimately included; seven studies were quantitative designs and five were qualitative. All studies were published within the past seven years and available in the English language. Eleven of the 12 were conducted at hospitals within the United States, one was conducted in China; two specified that they were conducted in medical and/or surgical units; two in pediatric intensive care units; one in a neonatal intensive care unit (NICU); one in a pediatric emergency department, and one in an adult intensive care unit (ICU)/cardiac step down ward. The other studies did not specify the type of unit that they were conducted in. The literature on handoff tools, although varied in focus, highlights some key points:

1. If the handoff tools are not useful, staff will not use them, even if it is "required" (Staggers, Clark, Blaz, & Kapsandoy, 2011; Staggers et al., 2012).
2. Most change of shift reports have some structure to them at baseline, but this varies with nursing experience (Foster-Hunt, Parush, Ellis, Thomas, & Rashotte, 2015)
3. Using a structured handoff tool improves change of shift reports, documentation, and interdisciplinary communication (Cornell et al., 2013; Gopwani, Brown, Quinn, Dorosz, & Chamberlain, 2015; Graan, Botti, Wood, & Redley, 2015; Panesar et al., 2016).
4. Providers and staff will utilize a well-integrated EMR handoff tool voluntarily, when they can customize it and find it to be user friendly. On the contrary, they will reject a tool that is not user friendly and poorly integrated (Staggers et al., 2011; Staggers et al., 2012; Vawdrey, Stein, Fred, Bostwick, & Stetson, 2013).

5. There appears to be a link between including handoff strategies in report and a decrease in treatment errors and patient safety risks (Drach-Zahavy & Hadid, 2014; Graan et al., 2015; Zou & Zhang, 2016).

Staggers et al. (2011) and Staggers et al. (2012) conducted two qualitative studies of 26 nurses each. Both studies found that staff rejected an EMR based handoff tool, even when it was required, if it did not meet their needs. Themes that were identified in both studies were a lack of "at a glance" information, the inability to customize reports, printed reports looking different than in the EMR, and nurses continuing to rely on their personalized paper "cheat sheets". Another qualitative study by Natafgi et al. (2016), which evaluated eight hospitals, noted that staff involvement in adopting the new handoff tool and staff understanding of the "big picture" were key facilitators that motivated staff to change their practice and incorporate the use of the new handoff tool.

Vawdrey et al. (2013) conducted a quantitative audit of an optional handoff tool that was well integrated into the EMR systems at two large academic medical centers. There was no formal training provided on the tool. Their findings indicated that over 6,000 staff (RNs, providers, and allied healthcare workers) accessed the tool during the one-month data collection period, and over 20,000 handoff reports were printed. This data suggests that if staff view a tool as useful and user friendly, they will utilize it regardless of whether it is required by their employer.

Another quantitative study looked at a NICU specific EMR based handoff tool and providers (hospitalists, residents, fellows, nurse practitioners) perceptions of its impact on sign out accuracy, satisfaction with the printed documents, and satisfaction with workflow. This study assessed a required handoff tool; although the use of the tool was not optional, this study

also showed a correlation between a well-designed and well integrated handoff tool and increased satisfaction by users (Palma, Sharek, & Longhurst, 2011).

In a PICU based qualitative study Foster-Hunt et al., (2015) observed nurses in a single PICU to assess how nurses structure their handoffs. Forty handoffs total were observed. The researchers noted that handoffs were conveyed in a structured manner, however the organization of information was varied. They observed that nurses with four or more years of experience led more organized handoff reports.

The Situation Background Assessment Recommendation (SBAR) method of handoff tools was assessed in two quantitative studies in this literature review. One evaluated the impact of the SBAR tool on change of shift by looking at five variables: shift report duration/time spent on shift report tasks, verbal communication, writing, time spent on the computer, and personalized sheets (Cornell et al., 2013). The other study looked at the impact of the SBAR on interdisciplinary documentation and communication between nurses and physicians in a PICU (Panesar et al., 2016). Cornell et al. (2013) noted that with the SBAR, improvements were seen in three of the five variables that were evaluated: time spent on task improved, more consistent reports with fewer interruptions, and a decreased dependence on handwritten personalized cheat sheets. Overall shift report time was unchanged in this study. Panesar et al. (2016) also noted improvements; however the variables they examined were related to interdisciplinary communication and documentation. Improvements in both areas were seen with the SBAR implementation. An increased frequency of documentation was also noted; however, this finding did not reach statistical significance.

The SOUND tool, was evaluated in a study that took place in the pediatric emergency department. The SOUND tool is another standardized handoff tool. The components of it include: synthesis, objective data, upcoming tasks, nursing input, and double check. This performance improvement study assessed the handoffs of multiple levels of providers (nurses, physicians, nurse practitioners, physician assistants, and residents) before the implementation of SOUND and after, by assessing for completeness of handoff reports. They found a significant improvement in the number of complete handoffs being provided (including 4 of 5 components of the SOUND tool): 26.2% pre-SOUND vs. 63.6% post-SOUND (Gopwani et al., 2015).

Lastly, three of the articles reviewed assessed treatment errors or patient safety in relation to patient handoff use. One study evaluated handoffs at a hospital that did not have a standardized handoff and found medication errors in 23% of the patients sampled, 52% of patients sampled had missed or delayed care, and 33% had missing documentation. This study also noted a link between those change of shift reports that included handoff strategies and a decrease in treatment errors. Handoff strategies identified in this study included: outgoing written summaries, an incoming check of medical equipment, updates from other practitioners besides the outgoing nurse, and interactive questioning (Drach-Zahavy & Hadid, 2014). Another study examined the effect of a new standardized handoff process, by evaluating nursing errors pre and post implementation. They found an overall decrease in treatment errors from 9.2% per 100 admissions to 5.7% (Zou & Zhang, 2016). The third study evaluated patient safety risks after the implementation of a standardized handoff tool in an adult cardiac ICU/stepdown ward. This study implemented the COLD handoff tool (connect, observe, listen and delegate). They found that utilizing the standardized approach in the transfer of care from the ICU to the step

down ward decreased patient safety risks and improved the variability of handoffs, by decreasing variability (Graan et al., 2015).

Despite all the data that is available, which demonstrates the positive effects of a standardized handoff on patient safety, more organized reports, and decreased errors, many institutions still struggle with handoff tool compliance issues. By creating education based on staff input (i.e. pre-survey data), the nurse/unit specific needs for handoff/change of shift report needs were identified and an in-service was designed.

Purpose

The purpose of this project was to determine what the barriers are to nurse utilization of the current EMR based hand-off tool in the pediatric intensive care unit (PICU) at a large teaching hospital in upstate New York. The second purpose was to make improvements to the handoff tool and make it more user friendly in order to improve utilization, shift report, and communication.

This project was informed by Donabedian's Structure-Process-Outcomes model. Donabedian is considered "the father" of quality assessment in healthcare (Best & Neuhauser, 2004). His model demonstrates the relationship between structure, process, and outcomes and identifies a cascading effect from structure to outcomes on quality of care in the health system. Therefore, if the structure is sound it leads to good process, and finally good outcomes. Structure refers to the resources available including materials, human resources, and organizational structure (e.g. facilities, equipment such as a handoff tool, number of staff). Process refers to the patient and provider interactions or the actions that bring about the change or result (e.g. treatment, diagnostic testing, patient compliance, staff compliance). Lastly,

outcomes are your end results. These are the effects of care on health status (adverse patient events, length of stay, cost, patient satisfaction; Berwick & Knapp, 1987). As the purpose of this study was to determine the barriers to nursing utilization of the EMR based hand-off tool in the PICU, this model provided a framework in which to guide this project.

Methodology

This study had a longitudinal pre-post analysis design, aimed at highlighting nursing staff likes, dislikes and frustrations with the EMR based handoff tool in the PICU. Human subjects protection approval was obtained through the St. John Fisher College Institutional Review Board and administrative approval was obtained from the collaborating institution where this study took place. A pre-project survey (made exclusively for this study) was collected using Qualtrics (see Appendix A) to obtain this data. After evaluation of the pre-test results, an educational program was designed based on the results of the survey data. Using an in-service design, the nursing staff received the designated education program, which included a PowerPoint presentation, review of the handoff tool, and handoff tool "cheat sheets" at each work station. The goal of the educational intervention was to improve usability of the handoff tool, staff satisfaction, and staff utilization. The education was deployed over a two-week period to cover all shifts (day, evening and night), and took place in the PICU at individualized work stations, until all willing and available nursing staff members in the PICU were in-serviced. Staff could decline the in-service, however no one who was approached did. The time span of the in-servicing accounted for staff vacations, illness, and varied hours and numbers of shifts each staff member worked. A roster was kept to ensure that as many of the above mentioned nursing staff members, were in-serviced. A post-project survey (see Appendix B) was issued two months after the final in-service was completed to re-evaluate nursing staff perceptions of the tool and change of shift practices.

The pre-survey and in-service were offered to all current PICU nursing staff and participation in the study was optional, therefore survey completion implied participant consent. The lead researcher on this project did not hold any managerial or nurse leader duties on the unit and therefore potential subjects would not have been influenced in any way to participate, due to concerns related to their employment. This was explained in detail in an information letter that was attached to the surveys (see Appendix C)

Sample

A convenience sample was obtained utilizing the PICU nursing staff. The pre-survey was sent out via email to all nursing staff on the unit (47 staff RNs total including per diem nurses). Twenty-eight nurses participated in the pre-survey, 13 nurses participated in the post-survey, and 33 nurses received the in-service education. Only those staff members who participated in the pre-survey and were in-serviced were allowed to participate in the post-survey. A reminder e-mail was sent for both the pre and post-surveys, to try to improve the response rate.

Data Analysis

Data was obtained from the ten question pre-survey, the ten question post-survey, and the handoff usage data provided by the collaborating institution. The pre-survey was administered over a two-week period from October 24, 2016 to November 7, 2016. The in-service sessions occurred over a two-week period from December 12, 2016 to December 26, 2016, and the post-survey was administered over a two-week period from February 27, 2017 to March 13, 2017. All questions were on a five-point Likert scale, except one open-ended question, which allowed staff to free-text responses. The Likert scale included five response choices: strongly agree,

agree, neutral, disagree and strongly disagree. Due to the small sample size and wide variance in sample size, from the pre to the post-survey, data analysis by descriptive means was undertaken.

In addition to nursing perceptions pre- and post-intervention, nursing handoff tool usage data was analyzed to assess for changes. This data was provided by the collaborating institution and was calculated based on nursing staffs' monthly use. Data was specific to PICU nurse usage. Data was reviewed for the month prior to and during the pre-survey (September 2016 and October 2016), and the two months following the in-service completion (January 2017 and February 2017).

Discussion

The purpose of this project was to improve handoff tool use by identifying nurse barriers to using the handoff tool in the PICU. A standardized handoff tool approach was created based on this and nurses were in-serviced on this approach. The goal was to improve handoff tool compliance and communication during nursing change of shift report.

The results and implications of this study are confidential protected information with the collaborating institution. The analysis and presentation of the results as well as the implications for this study were disseminated to the supervising St. John Fisher faculty and the collaborating institution and were found to meet accepted guidelines for successful completion of the project for the purposes of completing degree requirements.

Conclusion

Handoff tool use is required by TJC. Based on findings from the published literature, future projects on handoff change of shift report should focus on engaging staff to improve actual handoff tool use. Including training on change of shift report and the handoff tool during orientation for new staff would be one practice change that could help to improve compliance. Also, involving staff in the creation and appropriate integration of tools may help to ensure that the tools are truly user friendly. Researching the impact of specifying the tools per unit and nurse/provider needs should also be considered for future projects. Donabedian's structure-process-outcomes model notes the importance of quality from the top down in healthcare as it has a domino effect. The handoff hurdles highlighted in the review of the literature reinforces the use of this model to inform performance improvement projects related to handoffs; it highlights the importance of considering all three components to have a successful end product.

References

Anderson, J., Malone, L., Shanahan, K., & Manning, J. (2014). Nursing bedside clinical handover - an integrated review of issues and tools. *Journal of Clinical Nursing, 24*(5-6), 662-671.

Berwick, D. M., & Knapp, M. G. (1987). Theory and practice for measuring health care quality. *Health Care Financing Review, Spec No* 49-55.

Best, M., & Neuhauser, D. (2004). Avedis Donabedian: Father of quality assurance and poet. *Quality & Safety In Health Care, 13*(6), 472-473.

Cornell, P., Gervis, M. T., Yates, L., & Vardaman, J. M. (2013). Improving shift report focus and consistency with the situation, background, assessment, recommendation protocol. *JONA: The Journal of Nursing Administration, 43*(7/8), 422-428.

Drach-Zahavy, A., & Hadid, N. (2014). Nursing handovers as resilient points of care: linking handover strategies to treatment errors in the patient care in the following shift. *Journal of Advanced Nursing,* 1135-1145.

Foster-Hunt, T., Parush, A., Ellis, J., Thomas, M., & Rashotte, J. (2015). Original article: Information structure and organisation in change of shift reports: An observational study of nursing hand-offs in a paediatric intensive care unit. *Intensive & Critical Care Nursing, 31,* 155-164. doi:10.1016/j.iccn.2014.09.004

Gopwani, P.R., Brown, K.M., Quinn, M.J., Dorosz, E.J., & Chamberlain, J.M. (2015). SOUND a structured handoff tool improves patient handoffs in a pediatric emergency department. *Pediatric Emergency Care, 31* (2), 83-87.

Graan, S.M., Botti, M., Wood, B., & Redley, B. (2015). Nursing handover from ICU to cardiac ward: standardized tools to reduce safety risks. *Australian Critical Care. 29* (3)165-171. doi: http://dx.doi.org/10.1016/j.aucc.2015.09.002

Kear, T.M. (2016). Patient handoffs: what they are and how they contribute to patient safety. *Nephrology Nursing Journal, 43*(4), 339-343.

Natafgi, N., Zhu, X., Baloh, J., Vellinga, K., Vaughn, T., & Ward, M.M. (2017). Critical access hospital use of teamSTEPPS to implement shift-change handoff communication. *Journal of Nursing Care Quality, 32*(1), 77-86.

Panesar, R. S., Albert, B., Messina, C., & Parker, M. (2016). The effect of an electronic SBAR communication tool on documentation of acute events in the pediatric intensive care unit. *American Journal Of Medical Quality: The Official Journal Of*

The American College Of Medical Quality, 31, 64-68.

doi:10.1177/1062860614553263

Palma, J.P., Sharek, P.J., & Longhurst, C.A. (2011). Impact of electronic medical record integration of a handoff tool on sign-out in a newborn intensive care unit. *Journal of Perinatology, 31,* 311-317.

Patterson, E.S., & Wears, R.L. (2010). Patient handoffs: standardized and reliable measurement tools remain elusive. *The Joint Commission Journal on Quality and Patient Safety, 36* (2), 52-61.

Staggers, N., Clark, L., Blaz, J. W., & Kapsandoy, S. (2011). Why patient summaries in electronic health records do not provide the cognitive support necessary for nurses' handoffs on medical and surgical units: Insights from interviews and observations. *Health Informatics Journal, 17*(3), 209-223.

Staggers, N., Clark, L., Blaz, J. W., & Kapsandoy, S. (2012). Nurses' information management and use of electronic tools during acute care handoffs. *Western Journal of Nursing Research, 34*(2), 153-173.

Vawdrey, D. K., Stein, D. M., Fred, M. R., Bostwick, S. B., & Stetson, P. D. (2013). Implementation of a computerized patient handoff application. *AMIA Annual Symposium Proceedings*, *2013*, 1395–1400.

Zou, X.J., & Zhang, Y.P. (2016). Rates of nursing errors and handoffs-related errors in a medical unit following implementation of a standardized nursing handoff form. *Journal of Nursing Care Quality, 31*(1), 61-67. doi: 10.1097/NCQ.0000000000000133

Appendix A

Pre-Survey

Electronic Medical Record (EMR) Nursing Handoff Survey (Pre-Survey)

Lindsay C. Kraus BSN, RN

Masters Capstone Project: St. John Fisher College

Career Advancement System (CAS) Level III Project

Introduction: This survey is being conducted for my Masters Capstone Project and PICU Level III/Quality Improvement project. The purpose of this project is to determine what the barriers are to PICU nurses' utilization of the current EMR based handoff tool. By better understanding PICU nursing handoff and nursing perceptions of the current tool, our goal is to make improvements to the handoff, and make this a useful and user friendly tool. An in-service will be developed and implemented for all PICU staff, based on the pre-survey data, to improve the handoff tool/handoff process.

Distribution of this survey was approved by Wendy Hou MSN, RN, Nurse Manager Pediatric ICU on March 9, 2016; Sue Bezek MSN, RN Associate Director of Pediatric Nursing on April 28, 2016, and Mary G. Carey PHD, RN, Associate Director of Pediatric Nursing Research Center on May 4, 2016. Completion of this survey is voluntary and non-participation will in no way affect your current or future employment at Strong Memorial Hospital.

The pre and post-test surveys consist of ten questions and should take you no longer than 10 minutes to complete. You may stop the survey at any time and all surveys are anonymous. By participating in the surveys you are providing consent.

Date _____.

1) I complete the PICU handoff tool at the end of my shift routinely

    a) Strongly disagree
    b) Disagree
    c) Neutral
    d) Agree
    e) Strongly agree

2) I use the handoff tool while giving change of shift report

    a) Strongly disagree
    b) Disagree
    c) Neutral
    d) Agree
    e) Strongly agree

3) I find that the handoff tool is up to date when I use it

    a) Strongly disagree
    b) Disagree

c) Neutral
d) Agree
e) Strongly agree

4) It is clear to me, what information is expected to be in each section of the handoff tool

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

5) I feel most nurses change of shift reports are well organized and clear

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

6) After change of shift report I feel that I have all the information I need to take good care of my patients

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

7) The length of time that change of shift report takes is usually appropriate

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

8) I feel that a standardized change of shift report method would improve communication

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

9) I have worked as a PICU nurse for the following number of years

a) 0 to 3 years
b) Greater than 3 years to 6 years
c) Greater than 6 years to 9 years
d) Greater than 9 years to 12 years

e) Greater than 12 years or more

10) If you could change one thing about the current change of shift report procedure, what would it be?
Please briefly comment:

_____.
_____.
_____.
_____.
_____.

Thank you for your participation in this survey! Please contact me at lck05626@sjfc.edu with any questions.

Appendix B

Post-Survey

Electronic Medical Record (EMR) Nursing Handoff Survey (Post-Survey)

Lindsay C. Kraus BSN, RN

Masters Capstone Project: St. John Fisher College

Career Advancement System (CAS) Level III Project

Introduction: This survey is being conducted for my Masters Capstone Project and PICU Level III/Quality Improvement project. The purpose of this project is to determine what the barriers are to PICU nurses' utilization of the current EMR based handoff tool. By better understanding PICU nursing handoff and nursing perceptions of the current tool, our goal is to make improvements to the handoff, and make this a useful and user friendly tool. An in-service will be developed and implemented for all PICU staff, based on the pre-survey data, to improve the handoff tool/handoff process.

Distribution of this survey was approved by Wendy Hou MSN, RN, Nurse Manager Pediatric ICU on March 9, 2016; Sue Bezek MSN, RN Associate Director of Pediatric Nursing on April 28, 2016, and Mary G. Carey PHD, RN, Associate Director of Pediatric Nursing Research Center on May 4, 2016. Completion of this survey is voluntary and non-participation will in no way affect your current or future employment at Strong Memorial Hospital.

The pre and post-test surveys consist of ten questions and should take you no longer than 10 minutes to complete. You may stop the survey at any time and all surveys are anonymous. By participating in the surveys you are providing consent.

Date_____.

1) I complete the handoff tool at the end of my shift regularly

   a) Strongly disagree
   b) Disagree
   c) Neutral
   d) Agree
   e) Strongly agree

2) I use the handoff tool while giving change of shift report

   a) Strongly disagree
   b) Disagree
   c) Neutral
   d) Agree
   e) Strongly agree

3) I find that the handoff tool is up to date when I use it

   a) Strongly disagree
   b) Disagree
   c) Neutral
   d) Agree

e) Strongly agree

4) It is clear to me, what information is expected to be in each section of the handoff tool

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

5) I think most nurses change of shift reports are well organized and clear

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

6) After change of shift report I feel that I have all the information I need to take good care of my patients

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

7) The length of time that change of shift report takes has improved since the roll out of the standardized handoff was implemented

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

8) I feel that the standardized change of shift report method has improved communication

a) Strongly disagree
b) Disagree
c) Neutral
d) Agree
e) Strongly agree

9) I have worked as a PICU nurse for the following number of years

a) 0 to 3 years
b) Greater than 3 years to 6 years
c) Greater than 6 years to 9 years
d) Greater than 9 years to 12 years
e) Greater than 12 years or more

10) What part of change of shift has been most improved by the handoff tool?

Please briefly comment

_____.
_____.
_____.
_____.
_____.

Thank you for your participation in this survey! Please contact me at lck05626@sjfc.edu with any questions.

Appendix C

Information Letter

The Hurdles of the Handoff:
A Study of Why PICU Nurses are not Utilizing the Handoff Tool and How to Improve Utilization

Investigator: Lindsay C. Kraus BSN, RN

Dear Pediatric Nurse,

Thank you for your consideration in being a part of my student capstone project: *The Hurdles of the Handoff: A Study of why PICU Nurses are not Utilizing the Handoff Tool and how to Improve Utilization.* The purpose of this project is to determine what the barriers are to PICU nurses' utilization of the current EMR based handoff tool. As many of you know, utilizing this tool is a hospital requirement due to JACHO National Patient Safety Goals. By better understanding PICU nursing handoff and nursing perceptions of the current tool, the goal is to make improvements to the handoff, and make this a useful and user friendly tool.

If you decide to take part in this project, you will be asked to complete 2 surveys and attend an in-service/poster presentation in the PICU conference room. Each survey consists of ten questions and completion time is fewer than 10 minutes. The 1st survey will be distributed at the beginning of the project. The 2nd survey will be distributed approximately 2 months later. Based on the information collected in the 1st survey, an in-service/poster presentation will be designed to make improvements to the handoff tool/the handoff process. The 2nd survey will provide PICU and hospital administration with information on the effect of the in-service on staff handoff use and satisfaction, future handoff tool areas for improvement, and/or future research on this topic. The surveys will be administered electronically, a link will be sent to your work email. By completing the surveys you are providing consent. All surveys are anonymous and there will be no identifying information to link the pre or post surveys to a particular staff member. The data from the surveys will be stored securely on a password protected computer. Only myself and my faculty advisor, Dr. Colleen Donegan, will have access to it.

Your participation in this study is voluntary. You may choose not to participate or you may withdraw at any time, for whatever reason. Any subjects who take the pre-survey, but do not attend an in-service session, will be exempt from taking the post-survey. Taking part in this study is not part of your university duties, and declining will not affect your job. You will not be offered or receive any special job-related consideration if you take part in this project.

For more information or questions about this study you may email lck05626@sjfc.edu.

Please contact the Institutional Review Board (IRB) at St. John Fisher College (irb@sjfc.edu) for the following reasons:

- You wish to talk to someone other than the research staff about your rights as a research subject

- To voice concerns about the research
- To provide input concerning the research process
- In the event the study staff could not be reached

Thank you for your time.
Sincerely,

Lindsay C. Kraus BSN, RN
Pediatric ICU, 41800, Golisano Children's Hospital

Description of Research on Handoff Tools

Author/ Date	Purpose	Design	Sample	Outcome variables/themes	Data Collection Method	Design Limitations	Findings
Cornell, Gervis, Yates, & Vardaman, 2013	To assess the impact of the SBAR (situation, background, assessment, recommendation) tool on change of shift report in four medical surgical units.	Quasi-experimental pre/post design	75 nurses total from four medical surgical units. Some nurses were observed twice. 59 handoffs were observed in the baseline data collection. 36 handoffs were observed with the paper SBAR 51 handoffs were observed with the electronic SBAR	Five variables were examined: shift report duration, and time spent on shift report tasks, verbal communication, writing, on the computer and on personal sheets.	Nurses were trained on the new SBAR protocol. Direct observational audits were performed by three senior level nursing students by recording nurse tasks that were performed during shift report (SR): SR writing, SR verbal/conversation, SR computer use, reviewing, general computer use, gathering (supplies, materials), walking waiting, and other.	Observational audits could be subject to the auditor variation (3 auditors were utilized in this study) Wide variation in nursing experience level (4 months-38 years) and age (21 years old-62 years old). Both could affect how handoff is given and the speed of handoff.	Three of the five hypothesis were supported: -Improved time on task (i.e. decreased overall time to complete handoff). This was partially supported. Time on task improved (54.6% to 66.4%), but the overall duration of report was unchanged -More consistent reports, with fewer interruptions were found with the implementation of the SBAR. -There was no significant decrease in transcribed information with SBAR implementation -Increased computer

utilization with the electronic SBAR did not occur.

-Decreased dependence on nursing "cheat sheets" (personalized handwritten notes) was found, with a significant decrease in these sheets being used.

Author/ Date	Purpose	Design	Sample	Outcome variables/themes	Data Collection Method	Design Limitations	Findings
Drach-Zahavy & Hadid, 2014	To review the relationship between nursing handover and treatment errors in an institution that does not employ a standard handover template.	Mixed method prospective design (observation, surveys and data collection from patient charts)	200 bedside handovers observed in five wards. Five patients were randomly selected on each ward (3 complex, 2 simple) Majority of nursing staff were women, 24-60 years old.	-Treatment errors	Data collection occurred from 2012-2013 in five medical wards. Handover process was observed and an observation sheet was used to track strategies used in handover. Demographic data on the nurses was collected. A research assistant (senior nurse who was completing a masters degree) and a risk management expert reviewed the patient charts after to look for data that might indicate treatment errors	Presence of an observer may change how nurses give report Although hospital policy states that patients are evenly distributed amongst all wards, wards had differences in errors. May be variability in patient mix, unit culture, etc., which could affect outcomes.	-Large variation in use of handover strategies from high reliability organizations by nurses during handover report -23% of study patients had medication error -52% of patients had a care order missed or delayed -33% of patients had documentation missing -Links were found between including handover strategies and decrease in treatment errors.

Author/ Date	Purpose	Design	Sample	Outcome variables/themes	Data Collection Method	Design Limitations	Findings
Foster-Hunt, Parush, Ellis, & Thomas, 2015	To understand the structure of information transfer during handoffs in a pediatric ICU.	Qualitative observational study	14 Registered nurses with < 3 years of experience 26 Registered nurses with >4 years of experience 40 handoffs total were observed (20 in the morning and 20 in the evening).		Observation of 40 handoffs by two students of psychology, with previous experience in observation of nursing and/or medical. Observers utilized observation forms to take field notes, audio-recordings, and post-change or shift questionnaires were used to collect demographic data on the nursing staff involved.	Study only lasted 8 weeks Was limited to one specialized unit, PICU.	Shift report handoffs are conveyed in a structured manner, but organization of information in varied. A correlation between nurse experience and handoff organization was found, with more experienced staff (4 years or more of experience), had more organized reports then less experiences (3 years or less).

Author/ Date	Purpose	Design	Sample	Outcome variables/themes	Data Collection Method	Design Limitations	Findings
Gopwani, Brown, Quinn, Dorosz, & Chamberlain, 2015	To examine if implementing a structured handoff method, would improve the quality of patient handoffs in a pediatric emergency department.	Prospective, observational study that observed for a successful handoff (defined as using 4/5 components of the SOUND handoff tool)	638 handoffs were observed (286 pre-implementation) Participants included medical care providers and trainees in the pediatric ED (physicians, midlevel providers, residents, and nurses). Medical students were excluded. A convenience sample was used based on when one or more of the authors were present to collect data.	SOUND components in handoff (Synthesis, objective data, upcoming tasks, nursing input, double check)	Pre-implementation 286 individual patient handoffs in 48 team huddles were observed. Observers recorded whether the components of SOUND were covered in the handoff. Educational material on SOUND was then disseminated to staff. This included discussion in staff meetings, email, online teaching module (mandatory for all providers), and informational posters were placed in handoff areas. Post-implementation data collection began after the intervention was implemented. SPSS was used for data analysis	-Completeness of patient handoff measured, not accuracy -SOUND is not nationally validated as a tool -Compliance of completing the web based education on SOUND was variable -Results may be unique and specific to the pediatric ED -Bias may have inadvertently occurred based on convenience sampling when the authors were available (perhaps one shift was sampled more then another)	-Overall the proportion of successful handoffs showed a statistically significant improvement with the implementation of the standardized handoff, SOUND. 26.2% pre vs. 63.6% post.

Author/ Date	Purpose	Design	Sample	Outcome variables/themes	Data Collection Method	Design Limitations	Findings
Graan, Botti, Wood, & Redley, 2015	To create, implement and review the impact of a standardized nursing handoff tool by evaluating patient safety markers pre and post, for patients moving from the ICU to the cardiac ward in a metropolitan private hospital with a 15 bed level 3 ICU.	Qualitative, three stage, pre-post interrupted time-series design.	35 nurses were observed providing handoff 11 senior nurse stakeholders were involved in focus group interviews 20 handovers pre-implementation and 20 handovers post-implementation	Steps of handoff process COLD (connect, Observe, Listen, and Delegate) were used as coding framework.	Stage 1: naturalistic observation of 20 handoffs over a four-week time period, including an audio-recording of content, field notes and the audit tool outlining the use of the COLD process. Focus group of 6 stakeholders (3 ICU, 3 cardiac ward) was held prior to the observation to discuss the handoff process/ potential problems. Stage 3: utilized the same data collection methods as in stage one, but were completed over a five-week time period. A Focus group of 5 nurse stakeholders (3 ICU, 2 cardiac ward) were conducted where preliminary findings were discussed and verification of the adapted handoff tools was reviewed.	Only observed handoffs during weekday, day shifts, therefore staffing may be different then (more staff, more experienced staff, manager oversight presence). The "stakeholders" in the focus groups were identified as managers and nurse educators, who may not have true insight into the handoff process as they may not be at the bedside. Specified population, therefore data may not be transferable. More full time nurses were observed in Stage 3 compared with Stage 1.	Using a standardized handoff tool in the transfer of ICU patients to the cardiac ward, reduced variability in handoff and decreased patient safety risk.

Author/ Date	Purpose	Design	Sample	Outcome variables/themes	Data Collection Method	Design Limitations	Findings
Natafgi, et al., 2017	To examine change of shift handoff implementation in 8 hospitals as part of the TeamSTEPPS initiative	Qualitative study using semi-structured interviews and observations of change of shift handoff	Eight critical access hospitals (CAHs) who participated in the Iowa Rural Hospital FLEX Programs two day TeamSTEPPS master training. Hospitals had to be implementing handoffs in their medical surgical units for at least 1 year.	4 Themes identified: 1) purpose of handoff implementation 2) facilitators of handoff implementation 3) barriers of handoff implementation 4) trajectory	Semi-structured interviews with key informants (chief nursing officer, quality directors, medical-surgical directors, and nurse managers) and observations of the handoff process during change of shift. Handoff performance was rated using a scoring system on the inclusion of the five dimensions of teamwork behaviors. Based on the observation scores, hospitals were divided into two categories: high performing and low performing. Their qualitative themes were then compared to evaluate implementation attributes that may have effected handoff quality. Site visits were completed by experienced	-Variations in based on observer bias -Variations in types and/or acuity of patients in each hospital -Rural hospital setting may effect the ability to utilize this data in other settings.	Common themes for implementation of handoff were found amongst hospitals: safety and quality concerns; staff concerns for efficiency; performance concerns from leadership; desire for patient/family engagement -High and low performing hospitals identified the same purpose for implementation, however facilitators and barrier did. -Facilitators for change management included staff involvement and being part of the "big picture"

registered nurse
TeamSTEPPS
coaches from the
research team.

Author/ Date	Purpose	Design	Sample	Outcome variables/themes	Data Collection Method	Design Limitations	Findings
Palma, Sharek, & Longhurst, 2011	To assess the impact of an EMR integrated handoff tool in the NICU in relation to sign-out accuracy, satisfaction, and workflow.	Longitudinal pre/post survey	All providers in the NICU at Lucile Packard Children's Hospital were invited to participate (hospitalists, fellows, care faculty, NP's, and residents). 52 providers participated in the pre survey. 46 providers participated in the 6-month post survey.	-Sign out accuracy -Satisfaction with the printed sign off document -Satisfaction with workflow	The same eight question survey (multiple choice with one free text area for feedback) was used 1 month pre and 6 months post implementation of the EMR based neonatal handoff tool	Self-reported surveys were used, therefore understanding of questions, poor memory or intentional deception may have played a role.	The implementation of the NICU specific EMR based handoff tool lead to perceived improvements in the accuracy of sign-out, increased satisfaction with printed sign-out documents, and improvements in time spent transcribing information from the EMR. Providers reported increased time in updating the EMR based sign-out in comparison to the stand alone sing-out.

Author/ Date	Purpose	Design	Sample	Outcome variables themes	Data Collection Method	Design Limitations	Findings
Panesar, Albert, Messina, & Parker, 2016	To evaluate the impact of an SBAR template on documentation and communication between nurses and physicians, in a 12 bed PICU at a university children's hospital.	Retrospective time series design, that looked at residents' documentation of patient events over three phases (paper chart, free text EMR, and SBAR), using a scoring system for completeness of documentation. Notification of the attending physician and nursing was also evaluated during each phase. Study periods began 3 months after the implementation of each phase and data was collected in each phase over 3 months.	542 patients were admitted over the three time periods studied. Event notes were documented on 22/173 patients during paper chart phase; 28/197 patients during free-text EMR phase; and 34/172 during SBAR phase.	-Documentation quality (the four SBAR components): situation, background, assessment, and recommendation. -Frequency of documentation -Documentation of multidisciplinary communication (i.e. informing the nurse or attending).	Retrospective review of notes in the PICU during the specified time periods for each phase.	-No exclusion criteria or screening methods were used. -Single institution in a specified area (PICU) -All of the residents did not convert to SBAR only notes by phase 3 -No way to know if nurses were approving resident event notes, that they may not have actually been notified of by the resident.	Utilization of SBAR documentation lead to increased frequency of documentation (although not statistically significant $P=0.07$), improved completeness of documentation (included all four SBAR components) and improved interdisciplinary communication.