Improving Nurse-Provider Communication and Teamwork Using a Structured Daily Huddle

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Abstract

Problem & Purpose: A significant communication problem exists between nurses and providers on a 24-bed intermediate care unit (IMC) at a large, teaching hospital in the Mid-Atlantic United States. Providers express frustrations about the high frequency of redundant and inefficient secure text messages from nurses, while nurses express frustrations in the lack of provider updates regarding the patient's care plan. Baseline data revealed only 52.4% of patients had nurse-provider communication during morning rounds. This gap reveals a potential source for patient harm related to poor care team communication. This quality improvement project aims to implement a process for supporting structured nurse-provider daily huddles to improve nurse-provider communication and teamwork. **Methods:** The care team will huddle in the morning to discuss the plan of care through the support of required communication elements in the form of a checklist. Huddle data will be collected using huddle logs. A teamwork perception questionnaire will be completed by nursing staff pre- and post-intervention to evaluate changes in teamwork perception. A secure text message transaction report will be extracted for each nurse pre- and post-implementation to assess a change in the number of messages sent and received over 30-days. **Results**: After 14 weeks of implementation, huddle rates increased by 29.9% to 82.3% with a checklist completion rate of 85.6%. Teamwork scores decreased by 6.2%. The rate of secure text messages overall increased by 3.13%, but after more detailed analysis, the provider team with the best adherence to huddle and checklist usage experienced a 27.4% decrease in messages. **Conclusions:** Findings suggest that use of the checklist has improved the rate of huddles and help to decrease the frequency of text messages.

Keywords: teamwork, communication, nurse, provider, huddle, checklist

Improving Nurse-Provider Communication and Teamwork Using a Structured Daily Huddle

On a 24-bed neurotrauma intermediate care unit (IMC) at a large, teaching hospital in the Mid-Atlantic United States, a significant issue regarding verbal and written communication between nurses and providers exists. A recent interview with a clinical nurse specialist (CNS) highlighted the tension between providers and nurses. The CNS reported that the unit culture did not encourage collaboration or communication; therefore, nurses and providers were rarely proactive in communication and instead used secure text messaging for addressing specific issues. Consequently, providers expressed frustrations about the overwhelming frequency of errant text messages from nurses that could have been resolved during rounds. On the other hand, nurses too expressed their frustrations with providers in how little communication they received regarding the patient's plan of care.

In addition, an increase in new nursing staff on the unit, including new graduates and agency nurses, had contributed to communication challenges through an underpinning fear of speaking up amid current culture and expressed uncertainty in understanding the important points of communication. As a result, a baseline observation of communication methods revealed that only 52.4% of patients had their nurse and provider communicate the plan of care during rounds each day. A more detailed root cause analysis is found in Appendix A

This communication gap reveals a potential source for patient harm as it restricts the two professions from collaborating effectively, compromising teamwork and communication, and possibly leading to increased rates of preventable patient complications, errors, and death (Rosen et al., 2018). A study from 2016 showed that communication errors over the last five years were responsible for 1,744 deaths, 30% of all malpractice claims, and $1.7 billion in malpractice costs nationally (The Joint Commission, 2017).

Available Knowledge

A literature search was performed to assess the available data regarding the impact of daily huddles on nurse-provider communication and teamwork. Six studies were selected based on relevance and quality of the study, ranging from Level IIB to VB, according to the Johns Hopkins Nursing Evidence-Based Model (Dang et al., 2022). Two Level II systematic reviews found that daily huddles were effective in enhancing team performance, communication, and teamwork perception with statistical significance (McEwan et al., 2017; Pimentel et al., 2021). Two Level II independent quasi-experimental studies showed statistically significant improved teamwork and communication scores after implementation of nurse-provider huddles in several clinical settings (Adjei et al., 2022; Schwartz et al., 2017). A Level III qualitative study implemented huddles on several medical/surgical units and identified five overarching themes related to the benefits of huddles, including improved efficiencies and quality of information sharing, accountability, empowerment, sense of community, and culture of collaboration (Goldenhar et al., 2013). Lastly, a Level V quality improvement project on a pediatric ICU in Saudi Arabia implemented TeamSTEPPS daily huddle and showed improved communication rates between providers and nurses (Aldawood et al., 2020). In summary, the literature revealed consistent evidence to support this recommended practice change of daily huddle implementation to improve proactive communication and teamwork (Appendix B).

The purpose of this quality improvement project is to implement and evaluate the effectiveness of nurse-provider daily huddles on an IMC unit at this large academic medical center. The main process goal of the project is to support 100% compliance of daily nurse-provider huddles with an outcome goal of improving teamwork perception scores to the maximum score of 100% and a decrease in the rate of secure text messages by 75% after three months of implementation. Outcome measurement details are available in Appendix C.

Rationale

The Plan, Do, Study, Act Framework was selected to support quality improvement methodology for the purpose of the project (Appendix D). First, the planning phase consisted of an identification of stakeholders and champions, design training, and mapping of the implementation process (Ogrinc, 2018). The Do phase included a 14-week period in which daily huddles were performed. Huddles were facilitated by the nurse who was expected to attend provider rounds each morning using a focused checklist containing six high-yield plan of care topics. A detailed workflow process is found in Appendix E. The Study phase included a review of measurement data to support data analysis, recognition of trends, and identification of variation. Finally, the Act phase concluded the project through an analysis of outcomes and feedback from the first cycle of implementation. Areas for improvement and planned changes for future cycles will be further discussed as they become available. This cyclic framework allows for continuous improvement that responds to feedback and outcomes from previous cycles, leading to greater success and refinement of the intervention (Ogrinc, 2018). A timeline is found in the form of a Gantt chart in Appendix F. Following this framework will allow for testing the intervention on a smaller scale, on the neurotrauma IMC unit, prior to potential implementation facility wide.

Methods

The culture for communication between nurses and providers on the unit of implementation did not provide the mechanism for an effective exchange of information. Secure text messaging was used as the primary form of communication, allowing the possibility for interpretation errors to exist. Consequently, this was a source of frustration for both nurses and providers. When face-to-face communication did occur, nurses reported variability in what the providers wanted to know, making it difficult for them to determine what to say. Additionally, due to the inexperience of most nurses on the unit, communication with providers often felt uncertain and intimidating (Pfaff et al., 2014). To help address the ongoing staff turnover during this quality improvement project, monthly updates to the staff list were made to ensure new nurses were not excluded from the project.

Prior to implementation of daily huddles, a checklist was created in collaboration with providers, nurses, and nursing management to ensure relevance to the specified patient population. The tool contains six high-yield prompts related to the management of the patient for the nurse and providers to use in discussing the plan of care during huddles (Appendix G). Checklists were printed on badge backers and distributed to nursing staff to use as a quick reference. Education on the project was distributed two weeks prior to implementation using an asynchronous voiceover PowerPoint presentation to ensure increased accessibility to all nursing staff. Implementation of daily nurse-provider huddles occurred over 14 weeks where nurses were expected to huddle with providers each day to review the checklist and discuss the plan of care for each patient. Several additional strategies were used to promote the success of the quality improvement project. Workplace champions were identified to promote buy-in from nursing staff (Powell et al., 2015). Clinical supervision and support from the nurse manager and clinical nurse specialist were utilized to promote adherence to the intervention and act as a resource for issues that arose. Weekly emails were sent to nurses regarding the progress of the project to promote a shared goal and encourage nursing ownership of the project. Monthly nurse staff meetings and nurse-provider meetings were performed to assess the barriers and facilitators of daily huddles and provide updates on the progress of the project (Powell et al., 2015).

Several measures were used to track the progression and outcomes of daily huddle communication. The process goal of achieving a 100% completion rate of daily huddles was measured using a daily huddle log (Appendix H). Daily huddles were calculated by the number of nurse-provider daily huddles compared to the number of patients on the unit on the same day. Checklist use was calculated as the number of times the checklist was run divided by the number of nurse-provider huddles performed.

The outcome goal of increased teamwork perception to 100% was measured with modified TeamSTEPPS Teamwork Perception Questionnaire (T-TPQ) (Appendix I). This well-validated tool has a high reliability Cronbach alpha of 0.66-0.89 (median 0.88) and compared the change in teamwork pre- and post-intervention (McEwan et al., 2017). The outcome goal to decrease secure text messages by 75% was measured by comparing the pre- and post-implementation data of messages sent and received by nurses.

Privacy and confidentiality of staff and patients was maintained through de-identified data and protected health information that was locked on-site. Research Electronic Data Capture (REDCap), a Health Insurance Portability and Accountability Act (HIPAA)-compliant database, was used for data collection and management (Patridge & Bardyn, 2018). The project was conducted under a Non-human Subject's Research determination from the Human Research Protections Office (HRPO) of the University of Maryland School of Medicine Institutional Review Board (IRB). No conflicts of interest were identified and anticipated risks were minimal. Project findings are not generalizable beyond the present organization.

Results

Prior to implementation, the structure goal of distributing badge backers to 100% of nursing staff was achieved for all eligible nurses. During implementation this metric was negatively impacted by a new cohort of nurses who started during week three of implementation. This goal, however, was achieved again by week six through targeted education and badge backer distribution to new nurses. The second structure goal of providing daily huddle logs for 100% of days during the implementation period was achieved through weekly audits of material inventory.

During the 14-week implementation period, the process goal of 100% compliance with daily huddle completion was not achieved. On average, 82.3% of huddles were completed, with the highest week recording 91.2% completion. Notably, there was a slight decrease in compliance during week three and seven to 77.6% and 73.6% with a subsequent rebound afterwards to 83.1% and 86.1% respectively. The rebound increase is significant, as at the end of the lowest weeks, stakeholder meetings were held to help remind, encourage, and keep staff accountable to the project. Week six had the lowest rate of huddles performed at 65.4%. When looking at this further, only 15.5% of huddle logs were completed that week, compared to an average 50% completion in other weeks. Therefore, the data was more susceptible to outliers due to fewer total data points related to lack of huddle logs completed by nursing. In reviewing barriers with unit stakeholders, they report that when charge nurses have a patient assignment, they often have difficulty attending provider rounds and reminding staff to complete the huddle logs given their varying workload. Based on feedback, reminders were presented to nursing staff during the monthly staff meeting and small reminder notes were placed on several computers around the nursing station as visual cues, leading to improved huddle long completion rates.

The process goal of 100% compliance with checklist use was also not achieved, however improvements were noted. On average, a checklist was used during 85.6% of huddles. During the first seven weeks of implementation, compliance to the checklist varied weekly from 66.7% to 91.2%. However, from week eight through week 14, the checklist rate remained fairly stable at an average of 91.6%. This consistency in the second half of the implementation likely indicates adoption of the checklist into routine practice.

An outcome goal for teamwork scores was 100%, or maximum scores for all teamwork constructs. Teamwork scores were initially collected by distributing paper surveys pre-implementation. However due to low completion rates, project champions suggested the use of a QR code for distribution. With the use of the QR code, additional surveys were completed. Overall, teamwork scores showed a statistically significant decrease from 60.4% to 54.2% ($p<0.05$). When looking across the four established constructs of team structure, situation monitoring, mutual support, and communication, only the communication construct had a slight improvement in score (0.2%, $p=0.97$), while the others showed decreases (not statistically significant).

Monthly secure text message reports were extracted from one month pre-implementation to one-month post-implementation. Overall, a slight increase of 3.13% occurred in total messages sent and received between nurses and providers when comparing pre- and post-implementation. When organized by provider teams, Provider Team 1 and Provider Team 2 had increases in the number of secure messages sent and received with nurses, 13.6% and 40.8% respectively ($p=0.61$, 0.12). Provider Team 3 and Provider Team 4 had decreases in the frequency of messages by 27.4% and 48.2%, respectively ($p=0.20$, 0.26).

Several unintended consequences occurred throughout the project planning and implementation. There were several unexpected changes regarding the site of implementation and the project site representative, both of which consequently limited pre-implementation engagement. As a result of this site change and inconsistent site support, the project champions and stakeholders had a limited role in the knowledge, engagement and accountability of the project.

Discussion

A prevalent theme when obtaining qualitative feedback from nurses was a noticeable improvement in their interactions with Provider Team 3. Although this is only a narrative finding, it interestingly correlates with data that shows Provider Team 3 has the highest rate of huddle and checklist use when compared to the other teams (Figure J1). Data analysis of secure text messages sorted by provider teams further shows a decrease in Provider Team 3's frequency of nurse-provider text messages by 27.4%, helping to strengthen the association between the effectiveness of the structured huddle and its impact on nurse-provider communication.

Overall, the data over the 14-week implementation period demonstrates limited trends. Results show common cause variation, given a lack of consistent change above or below the median line. However, there are a few data points with notable variation. As mentioned previously, week three had a drop in huddles and checklist use, likely attributable to the start of a new cohort of nursing staff. In week six and seven, a similar drop in huddles and checklist occurred but improved after the stakeholder meeting where reminders about the project were given to staff. A detailed table of results is found in Table J1. A run chart reflective of huddle data, including huddles performed and checklist used is used to analyze trends in data (Figure J2). Figure J3 depicts the messages sent and received between nurses and providers, organized by provider teams.

While no specific financial analysis was conducted, there was only a minimal cost to implementing the project, which included the cost of printing badge backers and huddle logs.

The financial benefits of the project, however, are an inferred decrease in medical errors secondary to improved care team communication and improved care team morale leading to greater staff retention rates. Additional impact of the project was the increased education received by the nursing staff for implementation, which could be easily integrated into annual competency training or new hire onboarding.

When comparing the results to other publications, teamwork scores for this project were different than anticipated, as many other studies found statistically significant improvements in scores. This could be attributed to the context of quality improvement fatigue secondary to the COVID-19 pandemic that caused widespread healthcare provider burnout. Additionally, this has been an ongoing issue for years at this site, with several quality improvement attempts, that have further contributed to the burnout and pessimism of desired change.

Factors that may have limited internal validity include a lack of consistency across the exclusion criteria when measuring outcome measures, such as teamwork scores. For example, while night shift nurses, new hires, and travel nurses who started mid-implementation were excluded from the huddle, checklist, and secure text message data analysis, they were not excluded from the teamwork scores due to the use of paper surveys and a QR code for dissemination with anonymity of responses.

Conclusion

In summary, the implementation of nurse-provider huddles with a checklist may be effective in reducing frequency of secure message between nurses and providers. It unfortunately did not show statistically significant improvements in huddle completions, checklists utilized, teamwork scores, or even text messages. However, it did show an important correlation in Provider Team 3 when higher compliance to huddles and checklist use was associated with decreased frequency of text messages and a narrative improvement of communication from bedside nurses. While lacking statistically significant results, the correlation in trends are positive, especially considering the site challenges encountered while planning and implementing the project. These findings may be clinically significant and especially important in the context of significant healthcare worker burnout, where efficient yet thorough communication can lead to improved teamwork, job satisfaction and patient outcomes.

While the project only occurred over 14 weeks, strengths of the project include the sustainability and great potential for future cycles of the project. To promote sustainability, integration of the huddle and checklist into new hire orientation and ongoing discussion for praise and improvement during staff meetings should be incorporated. Future QI projects should focus on pursuing greater provider buy-in to ensure support and adherence from both groups of stakeholders and improve the collaborative culture of the staff. With this added support, huddle and checklist compliance rates may improve in frequency and consistency, leading to improved teamwork scores and reduced text message frequency. Further expansion to other IMCs within the organization may also be beneficial in encouraging culture change and greater sample sizes for data analysis. These changes will help to ensure greater overall sustainability for future cycles of the project.

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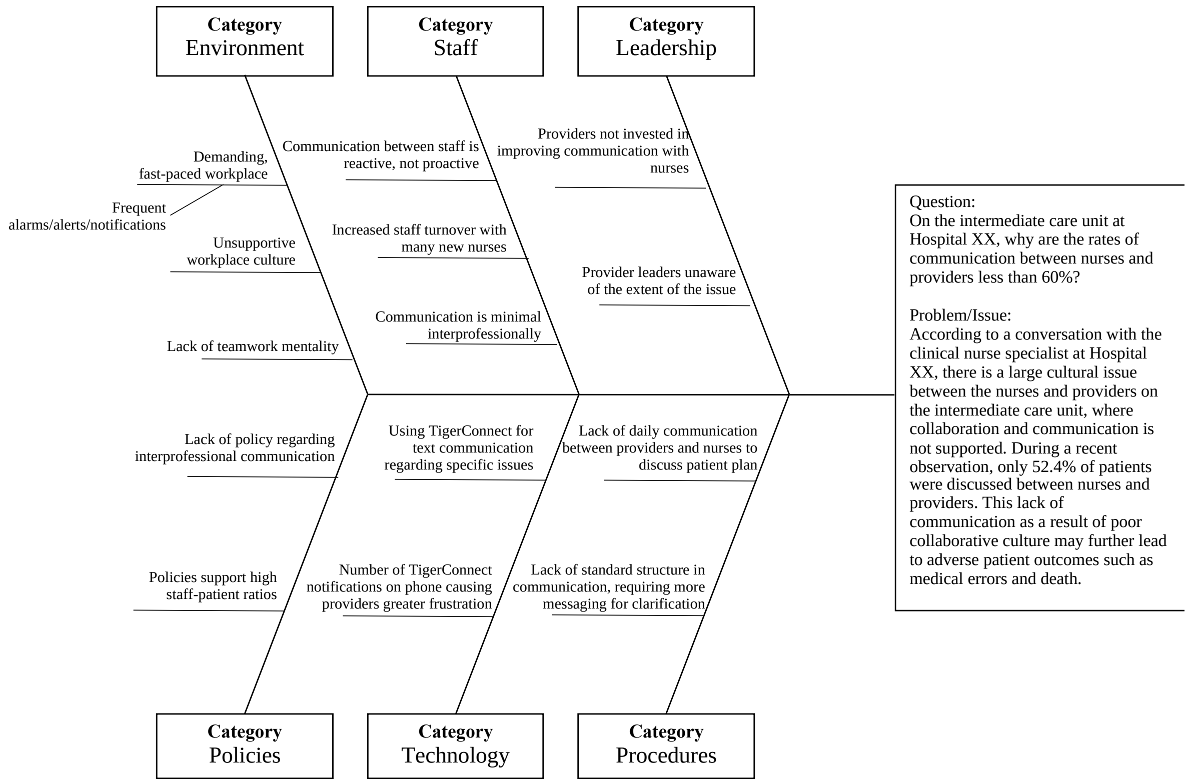
Appendix A

Root Cause Analysis



Appendix B

Evidence Review

Table B1

Evidence Review Table

<table>
<tr><td colspan="5">Citation: McEwan, D., Ruissen, G. R., Eys, M. A., Zumbo, B. D., & Beauchamp, M. R. (2017). The effectiveness of teamwork training on teamwork behaviors and team Performance: A systematic review and meta-analysis of controlled interventions. PLOS ONE, 12(1). https://doi.org/10.1371/journal.pone.0169604</td><td>Level and Quality
Level II-A</td></tr>
<tr><th>Purpose/ Hypothesis</th><th>Type of Evidence Research Design</th><th>Sample – Population, Size, Setting</th><th>Intervention/Procedures</th><th>Primary Outcome/Measures</th><th>Results/Conclusions</th></tr>
<tr><td>Review effective teamwork interventions to improve teamwork and team performance across several settings including healthcare and several teamwork dimensions</td><td>Research: Systematic review of controlled interventions with a meta-analysis.</td><td>Sampling Technique: Literature search in several relevant databases using the terms such as: team, interprofessional, interdisciplinary, intervention, teamwork, information sharing, communication, TeamSTEPPS
Setting: Variable across studies analyzed, includes healthcare settings
Eligible studies: Search returned 1517 possible articles, identified 51 studies included for analysis. Inclusion criteria: (1) Studies must examine effects of a teamwork intervention (not taskwork intervention) by comparing experimental vs control group, (2) provide measurement data on teamwork dimension or performance, (3) provide sufficient statistics to compute an effect size.</td><td>Control: No teamwork intervention (pre-intervention)
Intervention: Implementation of teamwork intervention (e.g. structured communication tool, coordination of communication, setting goals and action plans for communication, monitoring progress of communication goals through implementation of plan) and its impact across various teamwork and team performance dimensions including preparation, execution, reflection and interpersonal dynamics
Intervention fidelity: Variable across studies, but all studies had an</td><td>DV: Teamwork perception, team performance

DV Measures:
<u>Teamwork perception</u>
Instrument: T-TPQ survey from AHRQ for self-report and third-party assessments of team behaviors
Reliability: Self survey Cronbach's alpha of 0.88-0.95 based on construct, showing high reliability. Third-party variable based on moderator observation.
Measurement procedure: Administer survey or third-party observation for baseline data prior to intervention and post-intervention for evaluation several months later. Scoring methods were consistent at the time of both administrations.
<u>Team performance</u>
Instrument: Third party assessments of team behaviors and objective measures (e.g. number of team communication huddles)</td><td>Statistical Results: Implementation of teamwork interventions (e.g. TeamSTEPPS) were effective in healthcare for enhancing team performance (d=0.76, p=0.014) and teamwork (d=0.51, p=0.001). Additionally, it improved team performance across all dimensions, including preparation (d=0.60, p<0.001), execution (d=0.52, p<0.001), reflection (d=0.55, p<0.001) and interpersonal dynamics (d=0.57, p=0.004). Teamwork perception showed a statistically significant increase post intervention via self-report (d=0.38, p<0.001). Overall effect size for observed team performance was calculated to be 0.56 (0.08), p<0.001.
Clinical significance: This systematic review unlike past research focused only on controlled interventions across a</td></tr>
</table>

		Accepted: 51 quasi-experimental studies included in review and meta-analysis, with 8349 participants (4966 experimental, and 3473 control). **Power analysis:** Overall effect size for teamwork perception was calculated to be 0.683 (0.13), $p<0.001$. **Group Homogeneity:** NA	experimental and control group. Various interventions were provided to the experimental group and measured by self-report, third party, or objective measures.	**Reliability:** Third party variable based on moderator observation, objective measures, highly reliable. Interrater reliability was calculated to be over 90%, kappa (SE) = 0.80 (0.01) **Measurement procedure:** Third party observer placed on site to observe execution of team behaviors and data collected on key behaviors	range of settings, team types, and targeting specific dimensions of teamwork. **Conclusions:** Implementation of structured teamwork interventions are effective in improving teamwork performance and perceptions in healthcare settings.

Citation: Adjei, N. B. (2022). Implementing TeamSTEPPS training: Using evidence to impact teamwork on a medical-surgical unit. *MedSurg Nursing*, *31*(1), 9–12. https://search.ebscohost.com/login.aspx?direct=true&db=asn&AN=155300011&site=eds-live					**Level and Quality** II-B
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
To determine the effects of TeamSTEPPS program on teamwork and communication and patient experience on a medical/surgical unit.	Quasi-experimental research study, pre and post-test design	**Sampling Technique:** Convenience **Setting:** Medical/surgical unit at a100-bed community acute-care hospital **# eligible:** 44 nurses **# accepted:** 44, 2/44 were lost in follow up **# in control:** 44 nurses pre-intervention **# in intervention:** 44 nurses post-intervention **Power analysis:** Not provided **Group Homogeneity:** Good homogeneity given same sample, pre and post intervention	**Control:** Medical/surgical nurses prior to implementation of TeamSTEPPS huddle **Intervention:** Medical/surgical nurses implementing TeamSTEPPS huddle with providers into daily practice **Intervention fidelity:** Nurses received a 2-day course on TeamSTEPPS curriculum according to the AHRQ implementation manual. Implementation was supported with team members who served as TeamSTEPPS coaches, observing on site and encouraging integration into practice.	DV: teamwork and communication, and patient experience <u>Teamwork and Communication</u> **Instrument:** T-TPQ survey from AHRQ **Reliability:** Cronbach's alpha of 0.88-0.95 based on construct, showing high reliability **Measurement procedure:** Administer survey within team for baseline data prior to intervention and one month post-intervention. Total score was calculated for each teamwork construct as a sum. Scoring methods were consistent at the time of both administrations. <u>Patient Experience (nurse communication)</u> **Instrument:** HCAHPS patient satisfaction scores	**Statistical Results:** Teamwork: Independent two-tailed t-test showed statistically significant improvement in teamwork ($p<0.05$). Patient communication with nurses: Observation showed improvements in patient satisfaction scores (65.1 to 75.4) **Conclusions:** Implementation of TeamSTEPPS program improved teamwork and communication among nurses and support staff, while at the same time improving patient satisfaction.

				Reliability: Cronbach's alpha of 0.66-0.89 (median 0.88), based on construct,, showing adequate reliability. **Measurement procedure:** Evaluated scores before and after implementing the TeamSTEPPS program	

Citation: Aldawood, F., Kazzaz, Y., AlShehri, A., Alali, H., & Al-Surimi, K. (2020). Enhancing teamwork communication and patient safety responsiveness in a paediatric intensive care unit using the Daily Safety Huddle Tool. *BMJ Open Quality*, *9*(1). https://doi.org/10.1136/bmjoq-2019-000753					**Level and Quality** V-B
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
Enhance teamwork and communication using TeamSTEPPS daily huddles on a pediatric intensive care unit.	Quality improvement project; pre- and post-test	**Sampling Technique:** Convenience, includes frontline healthcare staff on the PICU **Setting:** Pediatric ICU at a specialized children's hospital in Saudi Arabia. **# eligible:** Not discussed **# accepted:** Not discussed **# in control:** Not discussed **# in intervention:** Not discussed **Power analysis:** not discussed **Group Homogeneity:** Same sample, pre and post-intervention	**Control:** PICU nursing staff prior to implementation of huddle. **Intervention:** Implementation of a TeamSTEPPS interdisciplinary daily huddle using a huddle tool **Intervention fidelity:** A series of plan-do-study-act cycles were used to implement daily huddles with a huddle tool to increase attendance, duration, and sharing of information.	DV: Compliance with completing daily huddles and discussion of patient safety issues **Instrument:** Huddle log sheet **Reliability:** Not discussed **Measurement:** Huddle log was created for the charge nurse to fill out upon conclusion of each daily huddle, additional documenting of topics discussed captured and shared weekly with all staff	**Statistical Results:** Initial compliance rate immediately after implementation was 73% which later increased to 97% after nine months. Discussion of patient safety issues totaled 340 issues addressed over 275 huddles. **Conclusions:** Implementation of TeamSTEPPS daily huddle increased team communication and addressed patient safety issues.

Citation: Pimentel, C. B., Snow, A. L., Carnes, S. L., Shah, N. R., Loup, J. R., Vallejo-Luces, T. M., Madrigal, C., & Hartmann, C. W. (2021). Huddles and their effectiveness at the frontlines of clinical care: A scoping review. *Journal of General Internal Medicine*, *36*(9), 2772–2783. https://doi.org/10.1007/s11606-021-06632-9					**Level and Quality** II-B
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
Identify if huddles using a communication tool help clinicians to improve communication and collaboration in an inpatient setting	Systematic review research study	**Sampling Technique:** Literature search was performed using several research databases. Search terms were not included. **Eligible studies:** A total of 860 studies were screened and assessed for relevance to the study. Inclusion criteria included clinical or medical setting, frontline healthcare workers, empirical data, and huddle intervention. **Accepted:** 158 studies were identified for review. Studies included experimental, quasi-experimental, observational, and cross-sectional studies. **Power analysis:** Effect size not discussed. **Group Homogeneity:** NA	**Control:** No huddle intervention **Intervention:** Implementation of a daily huddle **Intervention fidelity:** Variable across studies. All studies provided education prior to implementation of daily huddle. Several studies also provided training on specific communication tools to use during huddles	**DV:** Communication, staff satisfaction, safety culture, and teamwork culture **Instrument:** variable across studies but include observation, surveys (including T-TPQ survey from AHRQ) **Reliability:** Variable across studies. T-TPQ has Cronbach's alpha of 0.88-0.95. Observation typically have high reliability but is variable across parties. **Measurement:** Surveys were administered pre and post-test for evaluation. Third party observers were placed on site for observation with reporting tools to fill out with each huddle.	**Statistical Results:** Of the 101 studies measuring work and team process outcomes, statistically significant improvements were found across most of the studies measuring the outcomes of improved communication (64.4%; N=65), improved perception of safety culture (44.6%; N=65), improved staff satisfaction (29.7%; N=30), and teamwork culture (26.7%; N=27). **Clinical Significance:** Provides the most comprehensive analysis on the benefits of utilizing structured daily huddles to improve communication and teamwork in healthcare settings. **Conclusions:** Implementation of a daily interdisciplinary huddle improves team communication, collaboration, safety culture, and staff satisfaction.

Citation: Schwartz, M. E., Welsh, D. E., Paull, D. E., Knowles, R. S., DeLeeuw, L. D., Hemphill, R. R., Essen, K. E., & Sculli, G. L. (2017). The effects of crew resource management on teamwork and safety climate at Veterans Health Administration facilities. *Journal of Healthcare Risk Management*, *38*(1), 17–37. https://doi.org/10.1002/jhrm.21292					**Level and Quality** II-C
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
Determine whether the use of Crew Resource Management (CRM) and tools (e.g. checklists, briefings, huddles, debriefing) result in positive outcomes for improved teamwork and communication, developing a culture of safety, and lowering incidence of medical errors.	Quasi-experimental; pre- and post-test	**Sampling Technique:** Convenience **Setting:** Various VA facilities across a variety of clinical areas including inpatient and outpatient settings **# eligible:** 33 facilities **# accepted:** 33, 16/33 were lost in 12-month follow up **# in control:** 33 facilities participated in initial screening/ 2731 individuals provided baseline data **# in intervention:** 17 facilities participated post-intervention; 668/2731 individuals provided six month data and 1039/2731 individuals provided 12 month data **Power analysis:** Not provided **Group Homogeneity:** Good homogeneity given same sample, pre and post intervention	**Control**: VA staff prior to implementation Clinical Team Training (CTT) **Intervention**: Implementation of Clinical Team Training which combines training and hands on implementation of a patient safety project **Intervention fidelity**: TSCQ questionnaire given prior to initiation of CTT, 6 months later for those in initial training and 12 months after intervention. Implementation was throughout the organization with the support of the organization's top leaders who were actively engaged in the implementation process.	**DV**: teamwork and communication, and patient experience **Instrument:** TSCQ survey from SAQ covering teamwork, safety climate and perception of management **Reliability:** TSCQ survey has a Cronbach alpha of 0.91. **Measurement procedure:** Administer survey for baseline data prior to intervention, six months and then 12 months later post-intervention. Positive response rate was calculated for each question. Scoring methods were consistent at the time of both administrations.	**Statistical Results:** Implementation of CCT interventions were effective in increasing the positive response rate for briefings commonly occurring (68%, 71%) and nurse collaboration (70%, 69%) which were statistically significant from the baseline at both 6 and 12 months. Additionally, a statistically significant increase in positive responses for physician and nurse working together as a coordinated team (65%, 64%) as well an increase in communicating important issues (61%, 58%) over baseline at both post intervention data points. **Clinical significance:** Provides evidence that when CRM and specific tools are implemented, improved communication, collaboration and teamwork is the result. **Conclusions:** Implementation of training and structured tools are effective in improving teamwork perception and communication.

Citation: Goldenhar, L. M., Brady, P. W., Sutcliffe, K. M., & Muething, S. E. (2013). Huddling for high reliability and situation awareness. *BMJ Quality & Safety*, *22*(11), 899–906. https://doi.org/10.1136/bmjqs-2012-001467					**Level and Quality** III-C
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
To gather perspectives on the benefits and challenges of implementing huddles with frontline and administrative staff and propose methods for implementing huddles to reduce patient harm.	Qualitative study conducting semi-structured interviews and focus groups	**Sampling Technique:** Snowball sampling technique for interviews, email, fliers and focus group invitations **Setting:** Medical/surgical units of a 539 bed inpatient academic tertiary care children's hospital **# eligible:** 710 hospital staff (including nurses, physicians, medical directors) **# accepted:** 31 hospital staff members including nurses, physicians, and medical directors **Power analysis:** Saturation of study not discussed **Group Homogeneity:** Good homogeneity given same sample, pre and post intervention	**Control**: Staff prior to implementation of tiered huddles in the hospital **Intervention**: Tiered huddles in the hospital **Intervention fidelity**: Staff from four medical/surgical units participated in training for the implementation. Implementation was supported using standardized tools and huddle reports for reference.	**DV**: identifying benefits and challenges of team huddles **Instrument:** One-on-one semi-structured interviews with individuals and focus group discussions **Reliability:** Qualitative analysis done by researcher. Results shared with participants to gather feedback and assess validity. No Cronbach alpha calculated. **Measurement procedure:** From conversation, third-party reviewed meeting transcripts and developed key consistent themes across individuals and groups	**Results:** Five themes emerged from the interviewed, including improved efficiencies and quality of information sharing, accountability, empowerment, sense of community, and culture of collaboration/collegiality. **Clinical significance:** Study helps discover benefits and challenges of implementing huddles and proposes method for implementation of huddles. **Conclusions:** Implementation of team huddles improves information sharing, accountability, sense of community and team which fosters collaboration and may in turn reduces patient harm.

Table B2

Evidence Synthesis Table

Evidence Synthesis Table			
Category (Level Type)	**Total Number of Sources/Level**	**Overall Quality Rating**	**Synthesis of Findings**
Level 1 - Experimental study · Randomized Controlled Trial (RCT) · Systematic review of RCTs with or without meta-analysis			
Level II · Quasi-experimental studies · Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis	2 Systematic reviews of quasi-experimental studies 2 Quasi-experimental study	B	All studies found that implementation of a daily huddle, when given proper training ahead of time, were effective in improving rates of communication and teamwork perception. Unfortunately, while all samples were from the inpatient population, age groups may have varied. Further, measurement tools were not specified for all studies. Pimental et al., (2021) looked at additional outcomes and found that huddles significantly improved job satisfaction scores and safety culture.
Level III · Non-experimental study · Systematic review of a combination of RCTs, quasi-experimental, and non-experimental studies, or non-experimental studies only, with or without meta-analysis · Qualitative study or systematic review of qualitative studies with or without meta-synthesis	1 Qualitative study of semi-structured interventions	C	Five themes emerged from the interviews, including improved efficiencies and quality of information sharing, accountability, empowerment, sense of community, and culture of collaboration/collegiality.
Level IV · Opinion of respected authorities and/or reports of nationally recognized expert committees/consensus panels based on scientific evidence			
Level V · Evidence obtained from literature reviews, quality improvement, program evaluation, financial evaluation, or case reports · Opinion of nationally recognized expert(s) based on experiential evidence	1 Quality Improvement Study	B	Aldawood et al. (2020) conducted a quality improvement study over 9 months in a pediatric ICU across frontline healthcare staff. Daily huddles were implemented and saw compliance increase from 73% to 97% with a total of 340 safety issues addressed over 275 huddles.
Recommendations Based on Evidence Synthesis: Good and consistent evidence to support a practice change of implementing daily huddles in the healthcare setting.			

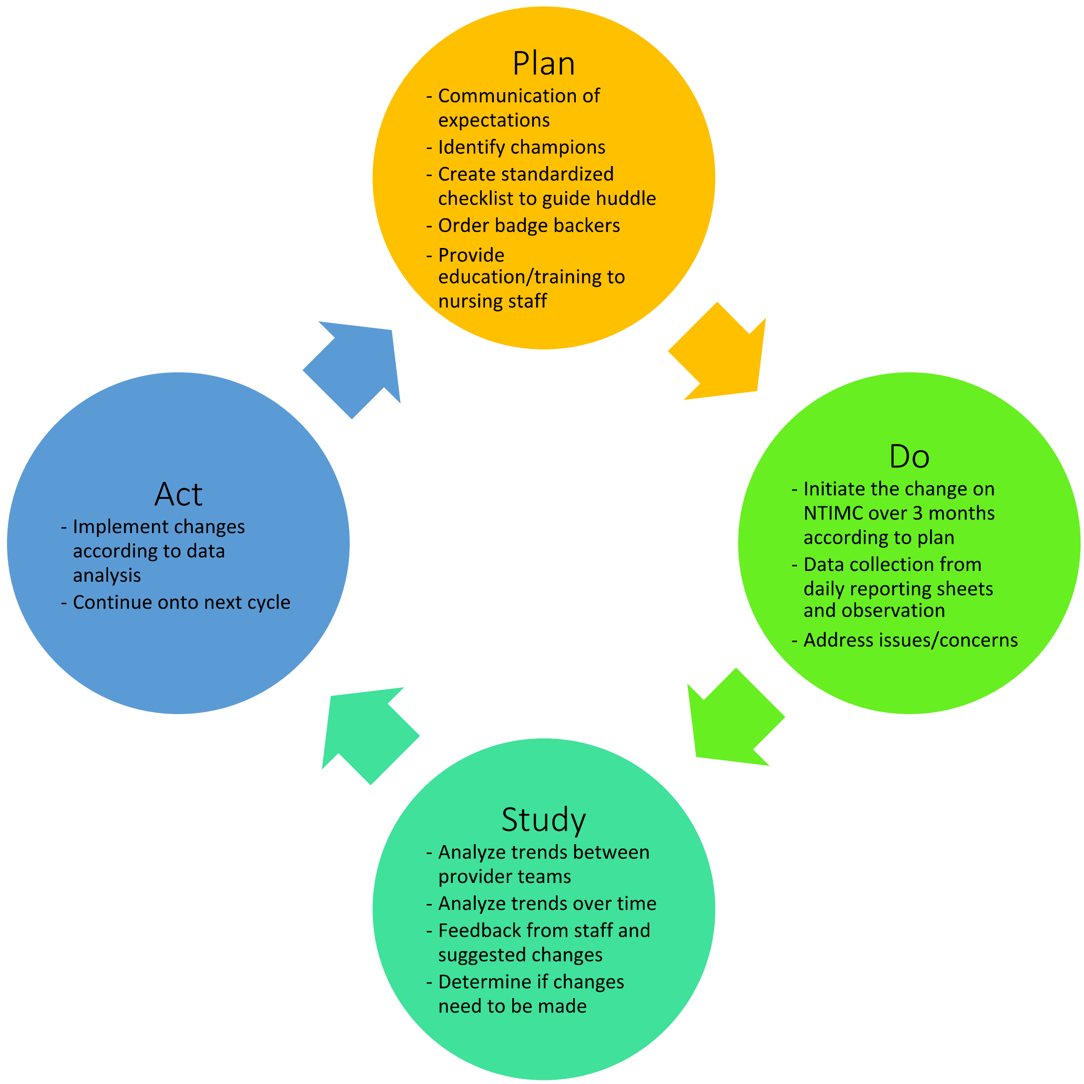
Appendix C

Outcome Measurement Table

Project Goals	Measure Pre-Implementation	Measure During Implementation
Structure Goal(s)		
1. Badge buddies for all nursing staff will be created and purchased by the clinical nurse specialist through the IMC unit budget prior to implementation of daily huddles	NA; new practice change	Determine the number of nursing staff who received a badge buddy.
2. Create and order daily tracking sheets for nurses to mark when daily huddles are completed each day on the IMC unit over the three month implementation period	NA; new practice change	Number of times a daily tracking sheet was provided to nursing staff during implementation period.
Process Goal(s)		
1. Nurses will participate in a structured daily huddle with providers on 100% of patients on the IMC unit by the end of the three month implementation period, as measured by the daily tracking sheets.	NA; new practice change	**Numerator:** # of nurse-provider daily huddles **Denominator**: # of patients on the unit
2. Nurses will run the daily huddle checklist for 100% of huddles with providers by the end of the three month implementation period, as measured by the daily tracking sheets.	NA; new practice change	**Numerator:** # of times the daily huddle checklist was run **Denominator**: # of nurse-provider daily huddles performed
Outcome Goal(s)		
1. Implementation of daily huddles for nurses and providers will decrease the number of TigerConnect sent/received by nurses by 75% at the end of the three month implementation period.	Number of TigerConnect messages sent/received by nurses pre-implementation	**Numerator:** Number of TigerConnect messages sent/received by nurses post-implementation **Denominator**: Number of TigerConnect messages sent/received by nurses pre-implementation
2. Implementation of daily huddles for nurses and providers will increase teamwork perception total score to 100% by the end of the three month implementation period, as measured by a teamwork perceptions survey.	Teamwork perceptions questionnaire score pre-implementation	**Numerator:** Teamwork perceptions questionnaire score post-implementation **Denominator**: Teamwork perceptions questionnaire score pre-implementation

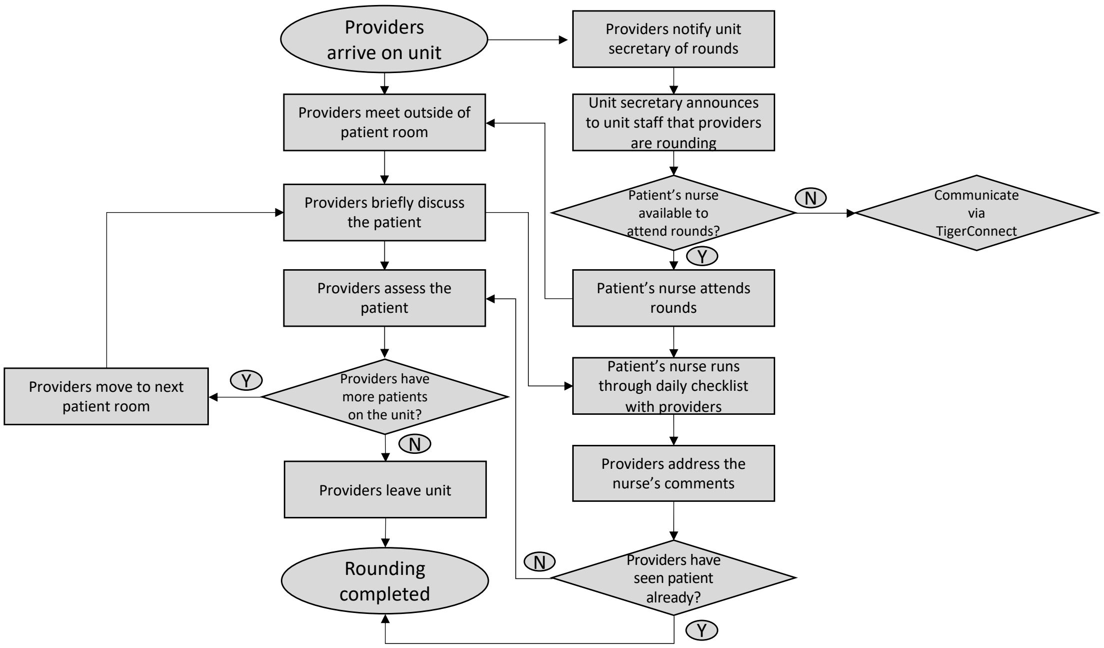
Appendix D

Plan-Do-Study-Act Framework



Appendix E

Desired Workflow Process Map



Key:
Oval—Start or end of the process | Rectangle—Step in the process | Diamond—Decision point | Y = Yes | N = No

Appendix F

Gantt Chart

DNP Project: Implementation of Daily Huddles for Registered Nurses and Providers to Increase Communication and Improve Teamwork

Student: Mandy Troendle

Project Site: Shock Trauma Center

Project Start: Mon, 1/24/2022

Display Week: 1

Status		Project Identification (NDNP810)	Responsible	START	END
cpt	< MOBALIZE	Start of Spring Term	Mandy Troendle	1/24/22	1/24/22
cpt		CITI (enter renewal date as end)	Mandy Troendle	1/29/21	1/29/24
cpt		HIPAA (enter renewal date as end)	Mandy Troendle	2/9/22	2/9/24
cpt		Identify stakeholders/team	Mandy Troendle, Elizabeth Cipra	12/15/21	1/31/22
cpt		Identify roles/responsibilities	Mandy Troendle	1/31/22	3/1/22
cpt	< ASSESS	Identify practice problem/root cause	Mandy Troendle, Elizabeth Cipra	1/24/22	1/31/22
cpt		Context Assessment	Mandy Troendle	2/15/22	3/1/22
cpt		Identify scope/goals	Mandy Troendle, Elizabeth Cipra	3/15/22	3/28/22
cpt		Synthesize Evidence	Mandy Troendle	2/14/22	3/14/22
cpt		Development project plans	Mandy Troendle, Brad Antlitz	1/24/22	4/6/22
cpt		MILESTONE: Submit project proposal	Mandy Troendle	2/21/22	4/6/22
		Site IRB Inquiry	Mandy Troendle	5/2/22	5/15/22
		REDcap	Mandy Troendle	5/2/22	5/13/22
		End of Spring Term	Mandy Troendle	5/13/22	5/13/22
		Project Development (NDNP811)			
	< PLAN	Start of Summer Term	Mandy Troendle	6/6/22	6/6/22
		Develop implemenation plans	Mandy Troendle, Courtney Cioka, Brad Antlitz	6/6/22	7/29/22
		Develop teaching plan	Mandy Troendle, Courtney Cioka, Brad Antlitz	6/6/22	7/29/22
		MILESTONE: Site Presentation and Approval	Mandy Troendle	6/30/22	7/7/22
		MILESTONE: IRB Determination	Mandy Troendle	6/6/22	7/29/22
		End of Summer Term	Mandy Troendle	7/29/22	7/29/22
		Project Implementation (NDNP812)			
	< IMPLEMENT	Start of Fall Term	Mandy Troendle	8/29/22	8/29/22
		MILESTONE: Project go-live (implement)	Mandy Troendle	8/29/22	12/16/22
		Educaton/Training	Mandy Troendle, Courtney Cioka	8/29/22	9/2/22
		Monitor tactics and progress	Mandy Troendle	9/5/22	12/16/22
		Communicate with stakeholders	Mandy Troendle, Brad Antlitz	8/29/22	12/22/22
		Data Collection	Mandy Troendle, Courtney Cioka	9/5/22	12/16/22
		Dissemination Plan	Mandy Troendle, Brad Antlitz	12/16/22	12/22/22
		MILESTONE: Manuscript	Mandy Troendle	12/16/22	12/22/22
		End of Fall Term	Mandy Troendle	12/22/22	12/22/22
		Project Evaluation and Dissemination (NDNP813)			
	< TRACK	Start of Spring Term	Mandy Troendle	1/23/23	1/23/23
		Analyze, synthesize & evaluate results	Mandy Troendle	1/23/23	2/15/23
		Sustainability Plan	Mandy Troendle, Brad Antlitz	2/15/23	2/22/23
		MILESTONE: Develop Poster	Mandy Troendle	2/22/23	3/15/23
		MILESTONE: Site Presentation	Mandy Troendle	4/1/23	4/1/23
		MILESTONE: Extremal Dissemination	Mandy Troendle	4/7/23	4/27/23
		MILESTONE: Final Manuscript	Mandy Troendle	4/30/23	5/10/23
		MILESTONE: UMSON Poster Day	Mandy Troendle	5/10/23	5/10/23
		Project Closure w/site	Mandy Troendle, Brad Antlitz	5/17/23	5/17/23
		End of Spring Term	Mandy Troendle	5/17/23	5/17/23

Appendix G

Daily Huddle Checklist Badge Backer

DAILY HUDDLE CHECKLIST

1. 24-hour events
2. Abnormals
3. Lines (foley, CVC, etc.)
4. Prophylaxis (bowel, DVT)
5. Orders
6. Today's plan

Appendix H

Huddle Log

Today's Date:

Patient Room #	Provider Team	Daily Huddle performed?	Checklist used?	Comments (if any)
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	
		Yes No	Yes No	

Appendix I

Modified TeamSTEPPS Teamwork Perception Questionnaire

	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Staff within my unit share information that enables timely decision making by the direct patient care team					
2.	Staff exchange relevant information as it becomes available					
3.	Staff share information regarding potential complications (e.g. patient changes, bed availability)					
4.	Staff meets to reevaluate patient care goals when aspects of the situation have changed					
5.	Feedback between staff is delivered in a way that promotes positive interactions and future change					
6.	When staff have a concern about patient safety, they challenge others until they are sure the concern has been heard					
7.	Staff relay relevant information in a timely manner					
8.	When rounding, staff allow enough time for questions					
9.	Staff verbally verify information that they receive from one another					
10.	Staff follow a standardized method of sharing information when rounding					

Appendix J

Results Data

Figure J1

Daily Huddle and Checklist Completion by Provider Team

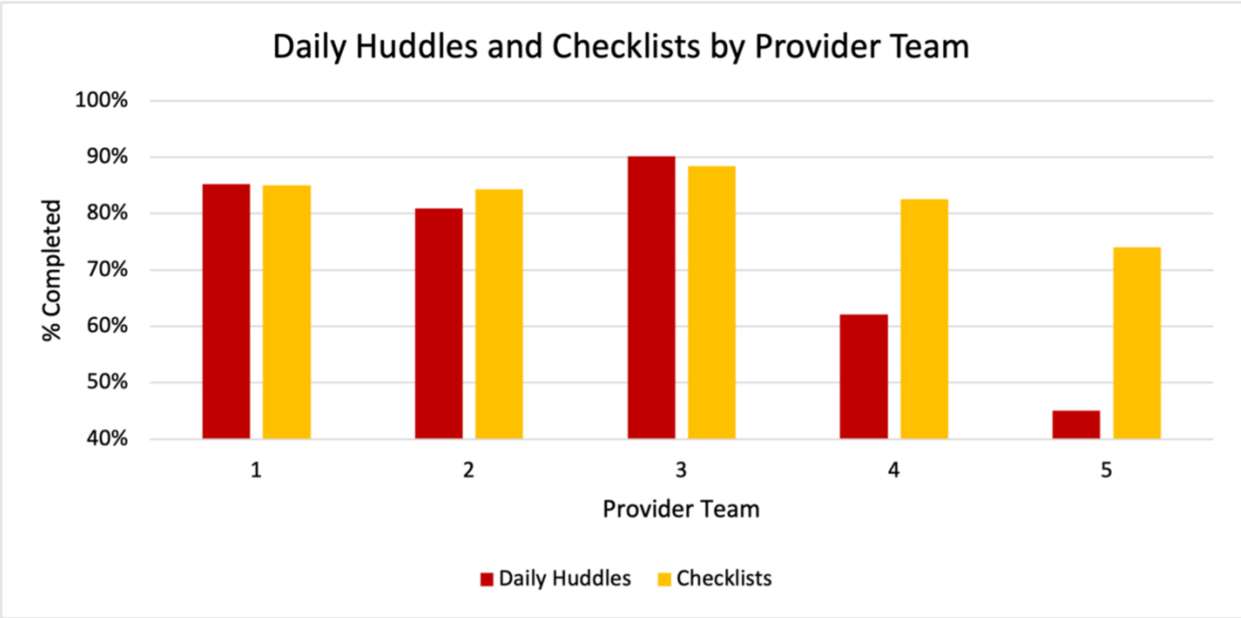


Table J1

Results by Week

Week	# Eligible for Huddle and Checklist	# Huddles Complete	# Checklist Complete	% Eligible for Huddle and Checklist	% Huddle Performed	% Checklist Performed
0	0	11	0	0.0%	52.4%	0.0%
1	57	48	38	90.5%	84.2%	79.2%
2	101	86	68	68.7%	85.1%	79.1%
3	67	52	36	45.6%	77.6%	69.2%
4	136	113	103	81.0%	83.1%	91.2%
5	79	64	51	47.0%	81.0%	79.7%
6	26	17	14	15.5%	65.4%	82.4%
7	53	39	26	31.5%	73.6%	66.7%
8	72	62	57	42.9%	86.1%	91.9%
9	76	62	59	45.2%	81.6%	95.2%
10	72	55	51	42.9%	76.4%	92.7%
11	68	62	57	40.5%	91.2%	91.9%
12	108	95	84	64.3%	88.0%	88.4%
13	57	45	39	33.9%	78.9%	86.7%
14	22	17	16	13.1%	77.3%	94.1%

Figure J2

Run Chart of Daily Huddle and Checklist Completion

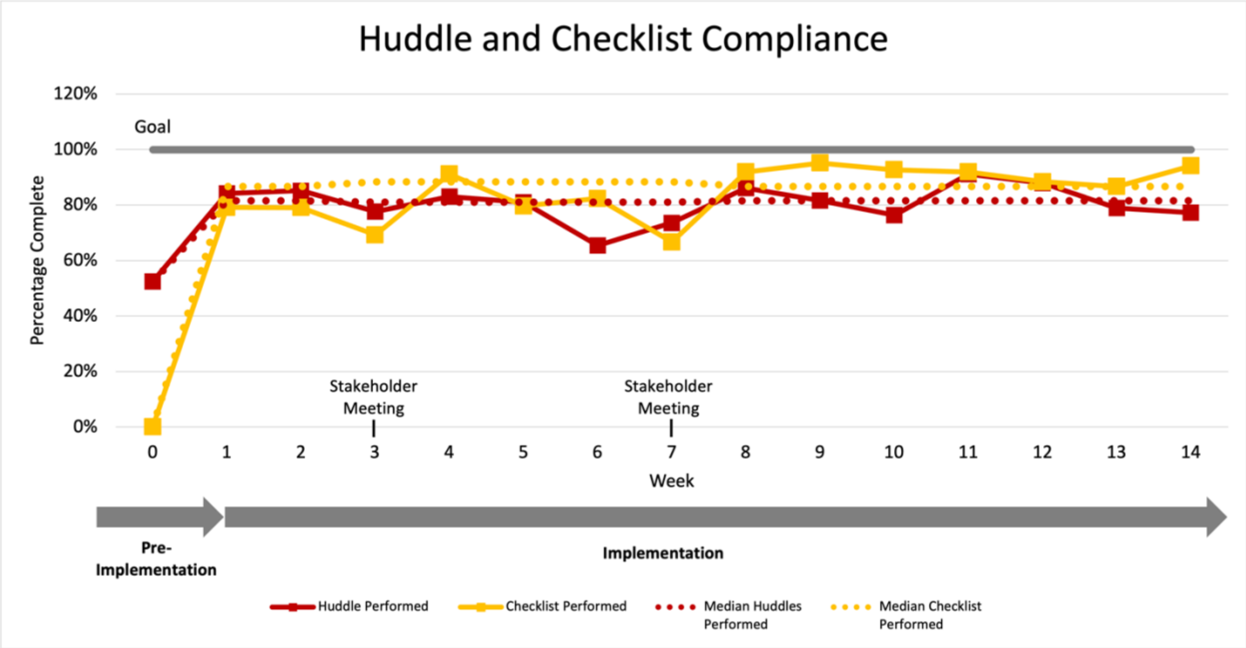


Figure J3

Messages Sent and Received Between Nurses and Provider Teams