STANDARDIZATION OF BODY IMAGING HUDDLE IN RADIOLOGY

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Standardization of Body Imaging Huddle

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Internship: Clinical Nurse Leader

NURS 653

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Standardization of Body Imaging Huddle

The goal of this project is to standardize a healthcare utilizing deliberate discussion linking events (HUDDLE) in the Body Imaging (BI) section for interventional procedures in the Radiology Department at UC Davis Medical Center in Sacramento. The Clinical Nurse Leadership (CNL) leadership themes of patient safety, teamwork, communication, and collaboration are the focus of this project. The AIM statement for this project is to standardize the daily IBI huddle. The project’s global aim is to increase nursing staff satisfaction related to the huddle by 15% from 10% by November 2016 and 25% by March 2017. Secondly, reduce time from patient arrival to in procedure room from 53 to 50 minutes by November 2016 and to 45 minutes by March 2017.

Statement of Problem

Communication amongst healthcare providers is critical to reducing errors, and in procedural areas the huddle can be used to create standardized communication amongst the team before the beginning of interventional procedures (Goldenhar, Brady, Sutcliffe, Muething, & Anderson, 2013). Interventional procedures are comparable to surgery in that they carry an inherent risk related to identifying the correct site, procedure and or diagnostic studies required. In radiology huddles are required where interventional procedures are performed. In Interventional Radiology (IR) and Neuro-Interventional Radiology (NIR), the implementation of a standardized huddle resulted in improved room efficiency, increased team collaboration and job satisfaction. During these huddles, designated team members communicate specific information; for example, specific laboratory results according to the Society of Interventional Radiology pre-procedure coagulation guidelines (Molloy et al, 2009), any history of problems following moderate sedation, laterality of procedure and what diagnostic specimens are requested.
In the Interventional Body Imaging (IBI) division, the huddle had been implemented in the latter part of 2014, before the implementation information was shared with the team however there was no champion assigned during the implementation and the previous supervisor wasn’t engaged in the process. Because of this, there were many inconsistencies in the huddle that included the huddle not starting on time, inconsistency physician attendance, inadequate pre-procedure preparation of patients and no formal delineation of team roles and responsibilities. This lack of effective communication and collaboration amongst the team resulted in staff reporting frustration and job dissatisfaction and this dissatisfaction was confirmed in a 2014 staff engagement survey.

The purpose of this project is to standardize the IBI huddle. The goals of this project are to have patients prepared appropriately for their procedures, an improvement in team communication, an increase in staff satisfaction a reduction in patient delays, and increased room efficiency.

Project Overview

The site for this project is a 600-bedded level one trauma academic teaching hospital in Northern California. The patient population includes a diverse group of adult and pediatric patients. The microsystem involved in this project is the radiology department. The radiology department operates 24 hours per day, 365 days per year and performs inpatient and outpatient diagnostic imaging examinations and interventional procedures. The project is being implemented is the BI division in the radiology department. The division performs a variety of diagnostic studies and interventional procedures in Ultrasound (US) and Computerized Tomography (CT). IBI procedures are performed for inpatient and outpatients, Monday through
Friday during the hours of 8 am to approximately 5:30 pm. Huddles are required daily in all divisions of the department who perform interventional procedures.

Outpatient IBI procedures are scheduled using the scheduling functionality in EPIC the hospital’s electronic health record (EHR). This system includes functionality such as nursing and physician documentation, medication administration and Snapboard to name a few. In the department of radiology there are no paper charts, all documentation is completed in EPIC. Outpatient elective procedures are scheduled based on a pre-determined schedule template that was created in EPIC. This template allocates a pre-determined procedure time that includes 15-minutes room turnover required for room cleaning. This pre-determined time was defined from historical reports of estimated procedure times. Inpatient procedures are not routinely scheduled and are performed based on urgency, for example, a patient who presents with clinical signs of sepsis and a diagnosis of an abscess will be given priority over an outpatient scheduled procedure.

IBI procedures are performed in two US procedure rooms and one CT suite, two other US rooms are utilized to perform diagnostic US examinations and the three other CT scanners perform diagnostic examinations 24 - 7. In the ultrasound section, there are registered nurses (RNs), one BI nurse practitioner (BI NP), US technologists, hospital assistants and BI Attendings, Fellows and residents that participate in providing care for patients.

Non-physician staffing for procedure rooms consists of one RN and one technologist. Prior to the beginning of the procedure the RN completes a pre-procedure clinical assessment in the EHR and inserts an intravenous catheter for fluid and medication administration. During the procedure, the RN administers sedation, anti-emetic medications and antibiotics, monitors and assesses the patient’s vital signs and when indicated applies dressings. During the procedure, the
RN has no other responsibilities, as outlined in the hospital sedation policy (UCDMC, Sedation Policy, 2014).

The technologist’s responsibilities include managing the US machine and setting the sterile tray immediately before the patient entering the room. During the procedure, they may be required to provide additional supplies to the physician and at the end of the procedure they complete the examination in EPIC, this allows the physician to then dictate the procedure report.

The AIM statement for this project is to standardize the daily BI huddle for interventional procedures. By working on this process the team expects to see a global aim of:

- An improvement in nursing satisfaction scores by 15% from the baseline of 10% by November 2016 and 25% by March 2017.
- Increase room efficiency by reducing the time from patient arrived to in procedure room to 50 minutes by November 2016 and 45 minutes by March 2017, baseline data from May was 53 minutes.

**Rationale**

Healthcare organizations face the need to change the structure of their care teams from one of chaotic care to a functioning care team with improved outcomes. The role of the CNL is essential to facilitating collaboration within the microsystem. (Bender, Connelly, & Brown, 2013). In radiology, efficient use of procedural rooms is critical to meet the increasing demands as technology increases and improved our imaging capabilities. As healthcare continues to see advancing technologies along with rising costs, healthcare systems are now responsible for managing these expenditures in conjunction with providing high-quality care as evidenced by meeting national benchmarks (Jeffers and Astroth, 2013).
Historically, biopsies and Radio-Frequency Ablation therapy procedures for tumor reduction were performed in operating rooms. Due to the innovation in imaging capabilities, the level of acuity of radiology procedures has increased, and BI now performs these more complex interventional procedures. As the acuity of the procedures increases, it is critical that all relevant patient information be shared amongst the team in a timely and efficient manner (Criscitelli, 2015).

Evidence from the microsystem

UCDMC is a Magnet accredited hospital; one of the ongoing requirements for reaccreditation is completion of staff engagement surveys every three years (American Nurse Credentialing Center, 2016). In 2015, the RN engagement survey revealed low scores in the job satisfaction domain and as the nurse manager I was required to complete an action plan to improve these scores. When I met with the nursing staff, they communicated that when working in the BI area there was disorganization that resulted in patient delays and they believed much of this disorganization stemmed from the huddle. As previously mentioned the BI huddle had been implemented in the later part of 2014, however there was little planning or follow-up post-implementation.

From August 2015 through February 2016, I worked with the new manager of BI to revise both nursing and technical staff schedules to facilitate improved patient flow. We reviewed EPIC schedule templates to verify that appropriate time was being allocated for procedures. This analysis revealed biopsies were being scheduled incorrectly, there wasn’t enough time being allocated, these times were adjusted to reflect correct procedure times. From July 2015 through March 2016 there had been an improvement from the time of patient arrival to time in room from 69 minutes to 53 minutes. Despite these changes, staff dissatisfaction
remained high and after discussion with staff they confirmed their discontent was related to the ineffectiveness of the huddle.

To identify why the current BI huddle was ineffective, the current process was analyzed using a Root Cause Analysis. The group included key stakeholders; Radiology RNs, BI Nurse Practitioner, US technologists including the supervisor, BI faculty directly involved in the huddle, IR section chief, BI manager and myself the nurse manager. Together the group participated in brainstorming meetings that helped identify issues that had the greatest impact on the huddle. The issues were categorized into five main sections 1) people. 2) process 3) professionals 4) equipment 5) technology. One area of concern identified related to the staff’s perception there were inadequate ultrasound machines available for procedures. As this was not within the scope of this project, the BI manager reviewed machine utilization and shared the findings with the group that there were enough machines for the volumes of cases.

Five areas of concern emerged during the RCA, and the participants agreed they be addressed as follows:

1. Define a morning and afternoon time for the BI huddle that would allow attendance of entire team including IR physicians.
2. Standardize pre-procedure laboratory requirements for interventional procedures.
3. Review the current scheduling template to ensure appropriate time allocation for procedures.
4. Define team roles; this included charge RN, procedure technologist, NP, Fellow, and resident.
5. Create a more collaborative team approach that includes frequent team meetings and identifying when conflict occurred and appropriate resolution.
Process Map

The information gathered from the team during the RCA was compiled and allowed for mapping of the huddle. The findings were reviewed by the team for accuracy to ensure the process reflected to huddle (Appendix A).

Cost Analysis

As King & Gerard identified as CNLs, we are at the forefront of healthcare and can impact cost delivery (p. 197, 2016). Before the implementation of the huddle, there were meetings to define the huddle and identify roles. These sessions lasted approximately five hours and included RNs, US technologists, one NP, US supervisor, BI manager, two physicians and myself. Physician costs are based on average radiologist salary of $128 per hour, the average hourly rate for an RN is $55, and NP is $60 and $44 for sonographers. The combined administrative salary expenses for the BI manager and me were $1200. The team consisted of four RNs, one NP four US techs two physicians and two administers; initial team meeting costs were $4,740.

One of the recommendations from the RCA was the importance of having the IR nurse coordinator (IRC) work in the BI section for approximately three months to facilitate the huddle standardization. The total cost for her to participate was $17,600 and additional nursing hours needed to cover 50% of her duties the cost was approximately $8,800. After implementation of the huddle in July, there were weekly process meetings with the team. The huddle staff education and on-going process meeting training costs for the project were $45,608.

Another system issue identified during the RCA was the lack of an electronic patient tracking system like the system used in IR. This system allowed all staff to monitor patient movement real-time throughout their stay. Approximately two years prior to this project an
electronic tracking system “HI IQ” was implemented in IR. This was the result of a Lean Six Sigma project that isolated that an electronic patient tracking system would increase patient throughput and communication. After this tracking system was implemented patient throughput improved as well as improved communication among the team. After discussion with radiology leadership the decision was made to implement “Snapboard”, as HI IQ was unavailable to be implemented in BI. Snapboard is the EPIC platform of an electronic patient tracking. In order to view Snapboard electronic monitors would need to be installed in physician work room, BI work area and the holding area where the patients were prepped and recovered. These monitors were installed by the radiology IT team and cost $4,500. The total project costs including staff time and the electronic monitors were $50,108.

The second goal of the huddle standardization was to reduce the time from patient arrival to the time the patient is in the procedure room. Pre - implementation data from March 2016 identified this as greater than 53 minutes, the goal of the project was to reduce to 50 minutes. Before the project implementation, approximately 12-16 procedures were performed in the two procedure rooms. If the goal of 50 minutes is met, an additional 140 minutes per room per day would be available to perform procedures. This resource could be used to perform either an additional one to two paracenteses or one biopsy being performed per day and annualized this could result in additional 260 procedures performed. This increase in procedure volume could result in approximately $492,000 in additional revenue for the department.

In the prior fiscal year, the section had seen an increase in the number of procedures performed by 40%, and inpatient procedures account for approximately 60% of this increase. By increasing the room throughput there could be a timelier turnaround for inpatient procedures. For example, being able to perform an inpatient biopsy within 24 hours of request could result in
reducing inpatient length of stay through earlier diagnosis and treatment. The overall cost savings of this project could result in additional revenue of $441,892. Lastly, as Criscitelli (2015) identifies that as a result of increased communication shared during the huddle there is a potential for a reduction in the number of wrong sided procedures.

Microsystem Analysis

The clinical microsystem is a complicated system that changes rapidly and staff needs to be able to adapt to meet the ever-changing demands and to prevent errors. All members of the microsystem need to work together to develop plans for improvement and maintain quality, manage outcomes and provide cost effective care to patients while striving to obtain certification such as Joint Commission Accreditation. Through the use of the 5P systematic framework, purpose, patients, professionals, patterns and process analysis of complex adaptive systems can be achieved (Nelson, Batalden, & Godfrey, 2007).

Purpose

The purpose of the huddle is to identify clinical concerns that may result in delays, canceled procedures or cause patient harm. Gerald & King recognize that “reducing variation is achieved by standardizing protocols” and is essential in today’s healthcare environment to survive (p. 123, 2013). By creating standardization, nursing and physician staff is all working with the same parameters preventing any opportunity for variation. For example, there are standardized pre-procedure coagulation guidelines published by the Society of Interventional Radiologists (SIR) that provide guidelines on the periprocedural management of coagulation status. Before the project these guidelines hadn’t been adopted by the physician group and this resulted in staff not knowing which coagulation panels to order as there was a different physician assigned to procedures every-day.
Another purpose of the huddle is to create individual roles and improve communication and collaboration amongst the team. When all members of the team actively participate in patient rounding or this case huddles staff perceived a greater degree of interaction and collaboration with physicians (Pritts & Hiller, 2014).

Patients

The patients in this process are from multiple microsystems, both inpatient and outpatients. The outpatient’s requests are scheduled due to the need for a diagnosis in the case of biopsies or drain placement or for therapeutic procedures such as paracentesis. The order for the procedure is received and protocolled by the BI NP and the attending. During the protocol stage, the decision is made to either schedule or if not indicated a communication is sent to the referring physician. Most of the outpatients are referrals from within the healthcare system. However, some outpatients due to the complex clinical presentation are referred to UCD due to the division’s ability to perform state of the art complex procedures.

During the RCA, it was identified that some of the issues with lack of preparation was the patient’s inability to complete their lab either due to distance from a lab or their lack of understanding of the importance of having them completed before the day of the procedure. To reduce this variable, during the call to schedule the procedure outpatients would be instructed to complete necessary pre-procedure lab tests. Approximately 48 hours before their appointment all outpatients would receive a pre-procedure call from a radiology RN to review pre-procedure instructions and if no labs had been completed the patient was instructed to arrive earlier. By having the patients arrive earlier to have their labs drawn this prevented delays due to lack of lab results.

Professionals
The professionals in this group included RNs, BI NP, US technologists, radiologists, the US supervisor, BI manager and myself the nurse manager. The non-licensed staff included radiology hospital assistants (HAs) and medical office support staff (MOSC). The HAs were responsible for patient transportation and assisted with patient preparation and the MOSC staff scheduled outpatient procedures. During the RCA, each team member shared knowledge from their prospectus and their ideas on how to improve the huddle. This sharing of information allowed the entire team to make informed decisions compared before to this project when staff were in their silos and communication was ineffective (Nelson et al., 2007).

**Patterns**

As mentioned staff was frustrated with procedures not starting on time, in the past to monitor these delays staff was required to complete a ‘service delay” form. These forms classified the delay problem for example, physician or nurse no available or incomplete coagulation panels. Once completed the forms would be reviewed by radiology leadership to identify process improvement needs. Many of the problems identified on these forms were the same as the issues isolated in the RCA. Staff didn’t believe these forms were useful, in fact they perceived them as contentious and during the RCA some of the physicians believed the forms were punitive and felt threatened by potential consequences.

**Process**

The RCA allowed the team to determine where they needed to work together to improve and standardize the huddle to reduce variations, improve communication and accountability. Criscitelli identifies huddles must have “structure and an operational focus with the basic aim of communication and patient safety and care” (p.656, 2015). By creating this structure all staff are all working with the same parameters preventing any opportunity for deviation from the
standardized procedure. One variations identified during the RCA was that each physician had different pre-procedure laboratory requirements. This presented a problem when a specific physician who approved the procedure didn’t end up performing the procedure and the physician who was responsible had different lab requirements patient delays ensued. The team agreed to adopt SIR’s “Consensus Guidelines for Periprocedural Management of Coagulation Status and Hemostasis Risk in Percutaneous Image-guided Interventions” (Malloy et al, 2009).

**SWOT Analysis**

As mentioned earlier the current BI huddle existed, however, didn’t have the same structure as the IR and NIR huddles. This project was overdue and presented a tremendous opportunity for the BI multidisciplinary group to accomplish a task that had yet to be successful. The strengths, weakness, opportunities and threats analysis were essential to identify issues that may positively or negatively affect the project (Appendix B).

One of the strengths was the level of commitment and engagement of the group. As previously mentioned the IRC would be able as able to work in the section to assist with facilitating this change. The team recognized her as someone who would be able to identify issues or variations immediately and assist with resolving them. She was viewed as an external partner and was respected by the team. She played a pivotal role in the development and maintenance of the IR huddle, and was committed to working with the BI team to achieve the same results.

Another strength was the new US manager who recognized the need for this process improvement; she agreed that this process improvement was inevitable and needed to be addressed to reduce the chaos within the section. Lastly, the project group was relatively small
in numbers, this could result in consensus being reached quicker and the group recognized this may not have been the case had there been a larger group.

A weakness identified was the availability of physicians to perform the IBI procedures. These physicians were responsible for performing procedures and reading diagnostic ultrasound examinations. Another weakness was the current RN and tech vacancies, the length of time it took to replace positions and the impact on current staffing. At UCD nursing can backfill vacancies or long term leaves with Short Term Assignment Nurses (STAN); however these RNs are paid at a higher salary than radiology RNs. The department was able to use STAN positions to backfill vacancies. In addition to nursing vacancies, nursing had recently received approval to hire additional FTE however the recruitment process was approximately four months. There was no staffing system in place to backfill US tech vacancies, the increased procedure volumes resulted in overtime for staff. The process to hire the vacant tech positions also took approximately four month. Lastly with the increasing procedure volume, staff voiced concerns there were insufficient rooms to perform procedures.

Opportunities identified were an improvement in team collaboration, communication increased staff and patient satisfaction and the potential to increase the number of procedures performed. Threats to this process were the potential that team members would be reluctant to move out of their silos and lastly workflow issues would not be communicated promptly or at all.

**Stakeholder Analysis**

The stakeholder analysis is based upon the strengths of the relationships of the group and their ability to accept and propel the change (Appendix C). The high stake and low resource are those who work most closely with the huddle for example RNs and technologists who care for the patients discussed in the huddle. The high stake high resource is the staff that facilitates the
process, the charge RN, US procedure technologists, BI faculty, and BI NP. The low stakes low resources are those who are not immediately involved but need to be kept informed of the changed. The low stakes high resources are those who have the potential to redirect resources; in this case this would be the referring services. They do not need to be informed at a high level however not keeping them updated could result in dissatisfaction and potential delays.

**Methodology**

A nurse satisfaction survey in 2015 revealed low scores in the domain of job satisfaction and ongoing staff frustration shared at numerous staff meetings identified there was a lack of standardization in the BI huddle. Another compounding factor was the increase in the number of BI procedures requested over the previous two years and the need to meet this demand. I met with the US manager who concurred with the need to standardize the huddle there was also impetus from physician leadership to improve the processes within the section.

The first meeting, scheduled in June 2016 consisted of radiology charge RNs, US technologists, management, and physicians. The goal of this initial meeting was to discuss the need for the improvement, review the current process (Appendix G) and introduce the proposed process (Appendix I). Approximately a week later the group reconvened to create the RCA (Appendix A). As previously mentioned because of the initial team meeting, the IRC joined the BI team. The purpose of this RCA was to identify causal factors that contributed to staff dissatisfaction and inefficient room utilization.

Before the introduction of the revised huddle a pre-implementation survey was administered to the nurses, the technologists, BI NP and the physicians involved in the huddle. The survey consisted of three questions related to attendance at the huddle, satisfaction and perceived barriers (Appendix E). The results were gathered to determine commonalities related
to barriers observed during the huddle and staff satisfaction specifically to the huddle (Appendix F). The results revealed that late arrival and lack of patient information were the greatest barriers identified during the huddle.

In healthcare, today change is constant and often chaotic, in order to manage this change process, I would need to choose a theoretical framework to help guide me in a systematic manner. There are different theories that can be adopted, such as Everett Roger’s Theory of Innovation and Diffusion, Roger Kotter’s eight step process, and Lewin’s theory of Unfreezing, Moving and refreezing. When comparing Roger’s and Kotter’s theories I found myself being able to apply components of each to my project; however, I chose Kotter’s eight-step change process to implement my project and recognized there were cross overs with Rogers theories. This process provided the framework necessary to implement the project.

Step I – Creating a sense of urgency. According to Kotter (2015), I was establishing a sense of urgency and the need for change because of staff dissatisfaction and throughput issues that led to patient delays due to the lack of standardization in the BI huddle. The question raised was “why is there a lack of standardization in the BI huddle?” What is the sense of urgency was it patient delays and staff dissatisfaction?

Step II – Forming a powerful coalition. By assembling a group to assist with the assessment of the problem, key stakeholders were identified and solicited to be part of the project team. It was critical to the success of the project that these employees were vested in this project and were identified as “champions”. The champions comprised of the IRC, charge RNs, US techs, the BI NP and physicians. Each had the common purpose of creating buy-in from those other team members who in Roger’s theory would be considered either the late majority or the laggards (Cain & Mittman, 2002). During this phase, innovators stepped up to assist with the
new process; one of those innovators was the IRC. As King and Gerard acknowledge by “collaborating with all stakeholders, one optimizes outcomes and supports a more comprehensive empowering workforce” (p.47, 2013).

Step III - Creating a vision. The vision was the creation of the standardized huddle. Despite the fact not all staff attended the huddle and weren’t involved in the RCA, it was critical the vision was shared with the entire team. These results of the RCA and the proposed new huddle were shared at staff meetings staff was ready for this change and were energized. When staff sees for themselves what you're trying to achieve, then the directives they're given tend to make more sense (Kotter, 2015). Once the RCA was reviewed and the process steps identified the next step was to communicate the vision.

Step IV – Communicating the vision. When the project was announced to the BI staff, I told them how in other interventional areas the huddle had improved room turnover and staff reported increased job satisfaction. As previous attempts at standardizing the huddle had failed as Cain & Mittman identified “relative advantage promotes a technology when the innovation is easier to use than the previous method” (p.8, 2002).

Step V – Removing obstacles and empowering employees. During this phase, it was critical to have the IRC involved in the daily huddle and identify problems. She had been pivotal in the success of the IR huddle; she experienced the creation of the IR huddle and championed it in IR to sustain the process. She and I explained to the team how part of the success of the huddle was going to be staff empowerment and their ability to remove the barriers. During the initial PDSA it was evident there was a lack of collaboration among the team. This had been present before the project and needed to be addressed. Goldenhaur et al. (2013) recognized that the huddle system they implemented resulted in increased staff collaboration and collegiality.
During this project when issues arose related to collaboration, the IRC or I would orchestrate team meetings where the issues could be discussed and in most instances resolved.

**Step VI – Creating short term wins** – After the RCA it was apparent this process would be a massive undertaking and would probably not be achieved in the designated time-frame. Therefore, it was essential that short term wins were identified, as Kotter identifies “nothing motivates more than success” (p. 6, 2015). One significant win for the team was the agreement the huddle would start at 07:45 am, this would allow attendance by the entire team. I realized by communicating these short-term wins there was a movement of those team members who were disengaged and complacent.

**Step VII – Sustaining** – Sustaining the huddle would be achieved through the ability to respond to issues that didn’t align with the goal of the huddle. For example, the schedule template didn’t allow enough time for certain procedures. After this was identified the template was modified. Huddles promote staff engagement and in 2010, “The Future of Nursing: Leading Change, Advancing Health” report published by the Institute of Medicine it was identified that teamwork should be considered a priority as well as the importance of collaborative teams. Creating a team culture where huddles become part of the daily routine “is essential to delivering high quality care” (Dutka, 2016).

**Step VIII – Anchor the change** - In the final stage of the project it will be essential to the success of the project that the team can put their “stamp on standards frameworks to feel that they are locally adopted” (Cain & Mittman, 2002). Huddles have become part of the culture at my institution as an approach to improve communication among multidisciplinary teams, improve discharge coordination and communicate patient needs in perioperative and procedural areas before the start of surgeries or procedures (UC Davis Health System, 2012)
In July 2016 after the project plan was communicated to the RN, US technologists, and physician teams the revised huddle was implemented. As was expected the huddle wasn’t a linear process the team recognized it would be a moving target and there would be multiple rapid Plan Do Study Act (PDSA) cycles. Nelson, Batalden & Godfrey identify the purpose of the PDSA cycles “invites clarity about who does what, when, and with what materials” (p. 276, 2007). The Plan phase created the revised huddle; this included role delineation, expectations of what clinical information would be presented during the huddle and the time the huddle would occur daily. Unfortunately, new residents and fellow start July 1st so to avoid mass confusion there were no new residents on service for the first month. During this initial two-week PDSA the IRC and I were tasked with being the champions of the pilot. The specific changes to be tested were as follows:

1) Huddle started daily at 07:45 am.

2) The charge RN, procedure technologist, body NP, Attendings, Fellow, and resident would all be present.

3) Clinical information for outpatient procedures would be presented by the BI NP and residents would present inpatient requests and work-up if completed.

During this two-week-period the IRC and I attended the huddle daily to monitor the member’s participation and attendance. Initially, she and I were designated the “champions”, when staff encountered issues during the huddle they would communicate via email or in person. The goal was to be able to identify where the huddle broke down. Quantitative data specific to time patient arrived in room was not collected during this period as this was one of the long-range goals.
Following this two-week PDSA, the team met to review the following results; team attendance and time huddle started. The IRC and I collected this data and the results demonstrated the huddle started on time and all team members attended 100% of the time. The IR coordinator and I questioned if this in response to the “Hawthorne” effect. Did the huddle start on time with all team members present due to the attention the group was receiving i.e. our presence? As Cherry identifies there is “a tendency of some people to work harder and perform better when they are participants in an experiment” (p1, 2016). Was staff changing their behavior due to the attention they were receiving from being part of the new process rather than the revised huddle? Was the presence of the IRC or me resulting in an initial increase in attendance that may eventually level off as the project continues and we no longer attend the huddle? To avoid this, I would only attend the huddle every Monday in the absence of the IRC and another day during the week.

Despite the team’s initial apprehension that the earlier start time wouldn’t be successful staff were engaged and committed to this goal. Designated team members presented clinical information and the team discussed any concerns that may impact the procedure. A concern introduced was the necessity of an electronic Snapboard that functioned both as a patient tracking system and documentation of pertinent procedural clinical information would be entered during the huddle. For example, how much Albumin a patient would require during their paracentesis.

In IR patient’s events and relevant procedure information was documented and tracked via a web-based system called HI IQ. HI IQ allowed all staff the ability to see at what point a patient was in their stay, for example, once a patient arrived in the department this event was tracked. In IR, the use of the tracking events had resulted in the reduction in the number of calls between
nurses, techs and physicians. Implementation of HI IQ was recommended however due to a recent EPIC upgrade the decision was made to utilize Snapboard. As the result of an EPIC upgrade there was now capability to track patient events in Snapboard the same as in HI IQ. The RNs had experience with Snapboard; however the techs used the EPIC “tech worklist’ to track their patients. The members of the huddle evaluated and approved the use of the upgraded Snapboard as the section’s electronic board and it was implemented during the second PDSA cycle.

The second PDSA cycle involved evaluation of the Snapboard; the purpose of the evaluation was to confirm the ability to enter clinical information and to monitor if the team utilized the patient tracking events throughout the patient stay. The team acknowledged clinical information was entered during the huddle; this was validated by review of the Snapboard. I monitored patient tracking daily in this second cycle and noted these events were being changed approximately 75% of the patient’s stay. After reviewing this data with the team, it was identified not all staff received adequate education in this process. Reeducation was completed, and monitoring continued. Another issue identified in this second PDSA cycle was procedure times allocated for paracentesis didn’t match the actual the length of time. Because of this patient delays ensued as well as staff frustration. After reviewing this data with the US manager, the decision was made to adjust these times.

After the third PDSA cycle the team agreed that the huddle standardization was complete, the aim had been achieved. The next phase of the project was the Standardize, Do, Study, Act. The unit is currently in this cycle, as Nelson et al identified “through repeatedly performing a task in a standardized manner, people gain new knowledge and insights for further improvement activities” (p.279, 2007). Currently the team is looking for further improvements such as the
possibility of evaluating patients in a clinic for high-risk procedures such as Radio-Frequency Ablation (RFA). This is standard practice for high-risk IR procedures such as Chemo-Embolization of tumors. During this clinic visit the IR physician and the IR NP review imaging and relevant lab results, and a plan of treatment discussed. This process has resulted in a reduction in issues the day of the procedures and patients have received education on what to expect during all phases of their stay.

There continue to be weekly team meetings where issues are discussed. The second staff survey will be completed the beginning of November this is approximately three months after the initial PDSA. The goal as previously mentioned is to see an improvement in staff satisfaction. Despite not having data staff have been vocal about the changes in the huddle and how the team is working in a more collaborative manner and all team members are engaged during the huddle. There continues to be 100% on time attendance of all team members, and if a faculty is unable to attend due to prior engagement, an alternate faculty member will be present. Another observation is the team’s ability to have an open discussion when issues arose, in a collaborative and collegial manner.

**Data Source/Literature Review.**

A review of the literature was conducted to provide evidence supporting the goal of this prospectus: standardization of BI huddle to improve staff satisfaction and improve room efficiency. The literature research relevant to this topic included the following databases: CINAHL, Google Scholar, and Medline. The search included the key words; healthcare huddles, staff satisfaction, team collaboration, high reliability and room efficiency. The articles selected were limited to the English language and were specific to hospital settings and the timeframe query was from 2009-2016.
The literature surrounding the importance of improved communication and increased collaboration achieved during huddles supports the concept that lack of communication results in reduced staff satisfaction and lack of team collaboration, reduced procedural room efficiency and a higher possibility in the potential for errors (Gymph et al., 2015). Gymph et al. (2015) described the first football huddle in 1894 at Gal-Laudet University, an institute for the deaf and hard-of-hearing. The purpose of this first huddle was to form a tight circle to prevent other teams from seeing the team’s sign-language signals. Fast forward, today the purpose of the huddle in healthcare has been developed to promote collaboration amongst healthcare providers to share information and communicate any patient safety concerns (Gymph et al., 2015).

Per Gymph et al. The HUDDLE acronym is Healthcare, Utilizing, Deliberate, Discussion, Linking, Events (p.184, 2015). In BI, this concept of the huddle is; for the BI designated team (HEALTHCARE), to meet (UTILIZING), at a designated time (DELIBERATE), to discuss, inquire and come to a consensus (DISCUSING), on specific clinical information (LINKING) for all patients scheduled for IBI procedures (EVENTS).

The Institute of Healthcare Improvement (IHI, 2011) recommend that huddles should be short, and all team members interact and keep the momentum going as it becomes a daily occurrence and part of the unit culture. By identifying a specific time and place for the BI huddle, there was no room for confusion amongst the team and promoted consistency. Previously huddles were supposed to start at 8 am; this didn’t allow enough time to have the first patient ready by the 08:30 am designated procedure time. Many days this first procedure late start resulted in delays that impacted the remaining schedule, resulting in staff overtime and dissatisfied patients. Another issue was because of lack of standardization and responsibilities
huddles had taken longer than 30 minutes again resulting in delays in getting patients in procedure rooms.

Gluck (2010) recognized that often time’s huddles are implemented as part of a global initiative to build a culture of safety and excellence through improved communication and collaboration. The BI huddle had originally been created in response to a lack of process, absence of collaboration among the team and inadequate communication among staff. The purpose of implementing the huddle then was to serve as a communication tool that incorporated relevant procedure information and promoted collaboration. After its initial implementation, feedback from the team acknowledged an improvement in communication; however as procedure volumes increased there was an increased need for those staff who had originally attended the huddle to start cases. It is my opinion during the initial implementation that this lack of involvement of key stakeholder to continue to develop the process resulted in the huddle’s failure. As stated by King & Gerard “Interdependence of teams is characterized by trust, collaboration, and willingness to help each other… (p. 136, 2013).

Glymph et al. (2015) detailed the importance of professional collaboration and communication to be an essential factor in providing safe and quality care. As identified huddles promote team collaboration and recognize that each team member is critical to the success of the huddle. This was achieved in the BI huddle because of the delineation of roles and recognizing that each role was essential to the success of the huddle. For example, before this project, clinical information discussed during rounds was not readily available for the entire team. After the RCA, the team agreed the procedure technologist would be responsible for entering this information into the Snapboard. This information was then available for the whole team not just those who attended the huddle, this allowed for a smooth transition of care.
Provost et al. acknowledge that “Huddles support efforts to improve patient safety when they afford opportunities for heedful interactions to take place among individuals caring for patients and embed mindfulness into the organization” (p.11, 2015). As the BI huddle continues to become part of the culture, staff is developing meaningful relationships with each other, and recognizes they have the same goal of providing the best possible care for their patients. Huddles can promote characteristics of conversation such as “diversity of perspectives, creative dialogue and trust” (Provost et al. p. 4, 2015). The dialogue of those involved in the huddle has changed through this process. Now there is a dialogue that includes all team members and seeks approval from the group. Each team member also has a responsibility that if a plan of care changes the entire team is notified to prevent confusion and promote transparency.

Historically relationships in healthcare reflected a hierarchical relationship between physicians, RNs, technologists and other members of the healthcare team. As healthcare relationships changed huddles have become a neutral ground where everyone is equal and is an integral member of the team. Sharma and Klocke (2014) studied the impact patient rounding had on RN job satisfaction, nursing workflow and nurse’s perception of their value as a team member. The study concluded that following the implementation of rounding interprofessional collaboration and job satisfaction improved. The feedback received was that the rounding was interactive, educational and pathed the was to developing a more collegial relationship. After the implementation of the revised huddle most staff feedback has been positive, I have personally witnessed an increased sense of job satisfaction specifically among the nursing and technologists.

Criscitelli (2015) noted that despite the completion of a surgical checklist before every surgery issues remained that resulted in delays. She identified that in addition to the surgical
checklist a pre-operative huddle was needed. The purpose of the pre-operative huddle was an opportunity for the team to review all that day’s cases, clarifying questions, identify any specific supply needs and set expectations for the day’s workflow. There are numerous articles that identify huddles can result in error reduction and adverse events, fortunately during this project there have been no untoward events. However, there was a situation where the procedure technologist called in sick and not been replaced during the huddle consequently no clinical information had been entered in Snapboard. After the huddle, another technologist recognized this and questioned the BI NP and the attending. After this I approached the technologist to thank them for speaking up, during our conversation she stated since the revision of the huddle there is a sense of empowerment among staff and improved communication especially with the physicians. As noted in the literature ineffective communication among healthcare professionals is one of the leading causes of medical errors and patient harm (Dingley, Daugherty, Derieg, & Persing, 2008).

The impact huddles have had in healthcare is well documented in the literature; increased trust, reduced errors, increased efficiencies, improved quality of information shared and increased levels of empowerment and accountability. Huddles promote staff engagement, in 2011, “The Future of Nursing: Leading Change, Advancing Health” report published by the Institute of Medicine identified teamwork should be considered a priority and the need for collaborative teams. Creating a team culture where huddles become part of the daily routine “is essential to delivering high quality care.” (Dutka, 2016).
Timeline

The project was implemented the beginning of June 2016 and will conclude the end of October 2016 (Appendix D). One of the challenges was this project commenced in the summer there were staff vacations as well as new BI fellows who started in July.

Expected Results

The results from this project will be both quantitative and qualitative. The quantitative results should be an increase in the time from the patient arrived to patient in the procedure room. This goal is to reduce the pre-implementation baseline of approximately 53 minutes to post-implementation of 50 minutes. Data will be reviewed the end of October because of this goal being achieved there could be an increase in capability to perform more procedures resulting in additional revenue.

Qualitative results in the pre-implementation surveys identified that 80% (n = 8) of the barriers were due to late arrival of team members, 65% was due to incomplete work-up and lack of role delineation. None of the respondents felt satisfied, 40% felt somewhat satisfied and 40% not satisfied. (Appendix E).

Nursing Relevance

Improving how teams communicate using huddles has numerous positive implications for the nursing profession. By participating in huddles, nurses will become active participants in how we provide care for our patients. Huddles provide a forum for the healthcare team to gather information and plan of care that includes the entire team. Increasing collaboration amongst the team also has the potential to reduce errors and prevent untoward events. The constructs of the huddle provide a standardized process and can also delineate specific roles. “Huddles can also
reveal factors that may contribute to potentially adverse patient outcomes” (Goldenhaur et al., 2013).

Improvement in team dynamics by participating in a huddle include improved working relationships, increased collaboration and trust. All of this culminating in team members recognizing each other as allies working towards a common goal. Standardizing processes such as huddles also result in less variation. As nursing continues to strive to improve outcomes as Clinical Nurse Leaders it is our responsibility to be the catalysts to promote excellence and increase interdisciplinary collaboration. As described by Bender (2014) staff satisfaction and moral is an essential component of a successful team.

**Summary Report**

In summary, the goal of this paper is to describe a process improvement initiative aimed at standardizing the IBI huddle. The project was implemented in the body imaging division within the department of radiology. The staff involved included radiology nurses, ultrasound technologists, BI NP, physicians and residents. The initiative began with results from a staff engagement survey that indicated staff dissatisfaction and when questioned staff indicated the IBI huddle was the main cause of their dissatisfaction due to inconsistencies during the huddle when compared with huddles in the other interventional areas of the department. In those huddles information shared was structured, each team member had a specific role and there was an electronic patient tracking system that identified where the patient was in their stay.

An extensive literature search was completed to validate how huddles have improved team communication, reduced wrong-sided surgeries and increased throughput. From this a global aim statement was developed; to improve nurse staff satisfaction by 15% from 10% and
improve time from patient arrival to in room from 53 minutes to 50 by November 2016. I chose Kotter’s theoretical framework to guide me through this project.

The process improvement began with the selection of the team who would be involved in the daily huddle. The potential project was explained to the team and how the project would proceed. Some of the employees had never been involved in any form of process improvement however despite this they were committed to this project. It was imperative the project team understand the process involved and recognize the change wouldn’t occur overnight. At the first meeting I explained the 5”P”s and how it related to this project, this provided the team with a foundation for understanding the proposed process (Nelson et al., 2007). After this initial meeting the team completed the root cause analysis.

As one of the goals of the project was to improve staff satisfaction a pre-implementation staff survey was conducted to determine current staff satisfaction and to identify barriers to the current huddle. Results of this survey identified that none of the staff were satisfied with the current huddle and only 40% were somewhat satisfied. The survey also identified that the highest barriers to the current huddle were lack of timely attendance of team members, absence of role delineations and incomplete clinical documentation (Appendix F). These results correlated with the issues identified during the RCA and in the current huddle process map (Appendix G). With this information, the team could define the elements for the revised huddle. The team realized there were many other issues that needed to be addressed however many fell outside the scope of the project. The team had to scale down to make the project more feasible for the time and resources available. One issue was patients scheduled for high acuity procedures such as RFAs should be seen at a clinic visit. The physicians on the team decided this will be explored in 2017 with the school of medicine to determine its feasibility.
The second goal of the project was to reduce time from patient arrive to in procedure room from 53 to 50 minutes. This data would be retrieved from EPIC reports from the EHR. These reports were reliant upon staff tracking these events in Snapboard. As Snapboard was new to some of the team it was critical that all staff understand the importance of tracking events. The key issues identified as top priorities for improvement were:

1. Define a morning and afternoon time for the BI huddle that would allow attendance of entire team including IR physicians.
2. Standardize pre-procedure laboratory requirements for interventional procedures.
3. Review the current scheduling template to ensure appropriate time allocation for procedures.
4. Define team roles; this included charge RN, procedure technologist, NP, Fellow, and resident.
5. Create a more collaborative team approach that includes frequent team meetings and identifying when conflict occurred and appropriate resolution.

As with any process improvement the project was presented to all the staff even though many of them didn’t participate in the huddle, they could be impacted if turnaround time was improved and as a result of a more collegial working relationship for the entire team. As there had been a current huddle in place there was hesitation from staff who were not part of the huddle and doubted the project could be a success.

A key component in the initial implementation was the inclusion of the IRC to help facilitate the process. She had been an integral part of the implementation of the huddles in the other interventional areas and the team respected her feedback and believed she would be an objective participant. Throughout the project, she assisted me with the process changes and
monitoring the outcomes. This project involved three PDSA cycles following the huddle standardization. Results of the first PDSA cycle indicated 100% attendance of all team members and of the huddle starting on time. After reviewing this information, there was concern these results were in response to exposure the team was receiving, the decision was made to have only the IRC or I attend the huddle. During the second PDSA cycle there continued to be 100% on-time attendance by the team. Concurrently the Snapboard was evaluated for accuracy of clinical information and patient tracking. Results from this cycle revealed not all staff had received training on how to track events. Re-education was completed and during the third PDSA cycle there was an improvement in patient tracking.

After the third PDSA cycle the team agreed the next step was the Standardize, Do, Study and Act. As the huddle at times isn’t a linear process the team realized this could be an ongoing process, however the key elements wouldn’t change i.e. time of huddle, roles, patient pre-procedural preparation and presentation at huddle. Before this project, typically only the charge RN, the faculty and the NP spoke during the huddle. As Gymph et al. noted “no-one can hide from communication during the huddle” (p. 184, 2015); following the role delineation each team member was responsible for an aspect of care. This resulted in increased communication from each team member as it pertained to the patient for example, the technologist would identify any previous procedures and technical approaches. This information was also documented in the Snapboard for all staff members to review, feedback from staff identify how this additional information continues to improve continuum of care and transition between staff members.

Following the third PDSA cycle, evaluation of the process was analyzed electronically using the same staff survey. Results of this survey indicated the following; a 60% increase in staff who were satisfied and an increase from zero to 28% of staff who were very satisfied with
the new huddle (Appendix I). These results were better than expected and in speaking with staff; the success of the huddle has improved patient care and an increase in staff satisfaction.

Secondly, barriers to the success of the huddle revealed that lateness had the highest score. In discussing this with the team, the lateness was quantitated to approximately less than five minutes; this was still a reduction from previous late of arrival of more than 10-15 minutes. The team also indicated because of the standardization, the huddle now lasts approximately 15 minutes versus 30 minutes prior to the project. EPIC reports were generated to evaluate time from patient arrived to in room. These reports indicated a reduction from 53 minutes to 51 minutes. This was outside the goal of 50 minutes; however is a significant improvement from initial data reviewed in 2015 that indicated this to be approximately 60 minutes.

A challenge of this project was the numbers of issues revealed during the RCA. The team had to drill down to those issues that could be impacted by the project with the time and resources that were available. Throughout the project the team continued to make massive improvements in the huddle and is currently monitoring the process. As part of sustaining any project having innovators or champions can assist with ongoing modifications, it was critical to the ongoing success of the project that these employees are vested in the continuation of the project (Cain & Mittman, 2002). Due to the success of the project, the charge RNs and two of the techs realized they can assist with facilitating the huddle and this has allowed the IRC to return to her actual role.

Criscitelli (2015) acknowledges when implementing huddles, it is essential that leadership set effective team-based guidelines, in my role as the nurse manager I was fortunate to have set these guidelines with the team and can continue to actively participate in the ongoing process. Huddles have become part of the culture in radiology and as we continue to strive to
provide excellent care, huddles are an integral part of how our team communicates not only within radiology but to referring services. An improvement in communication among the radiology team and referring services is as a result of pertinent clinical information documented on Snapboard. In radiology there has been a reduction in the number of telephone calls between radiology staff.

As this project unfolded, the team confronted challenges with a “can do attitude” and their commitment to the project never faltered. As King & Gerard (2016) identify team building involves building trust and recognizing the team’s strengths. Throughout this project the team continued to grow and relied upon each other’s strengths to continue to improve the huddle. With my new foundation of the CNL core competencies, I will continue to “participate in a shared leadership team to make recommendations for improvement at the micro-, meso-, or macro-system level” (AACN, 2013).
References


Appendix A

Root Cause Analysis Fishbone
## Appendix B

### SWOT Analysis

<table>
<thead>
<tr>
<th><strong>STRENGTHS</strong></th>
<th><strong>WEAKNESS</strong></th>
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<tbody>
<tr>
<td>TEAM COMMITMENT</td>
<td>PHYSICIAN AVAILABILITY</td>
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<tr>
<td>TEAM DEDICATION</td>
<td>RN &amp; TECH VACANCIES</td>
</tr>
<tr>
<td>NEW LEADERSHIP</td>
<td>US ROOM CAPACITY</td>
</tr>
<tr>
<td>IR NURSE COORDINATOR</td>
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</tr>
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<td>SMALL GROUP</td>
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<table>
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<tr>
<th><strong>OPPORTUNITIES</strong></th>
<th><strong>THREATS</strong></th>
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<tr>
<td>IMPROVED TEAM COLLABORATION</td>
<td>STAFF HESISTATION</td>
</tr>
<tr>
<td>IMPROVED COMMUNICATION</td>
<td>WORKFLOW ISSUES NOT</td>
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<tr>
<td>ADDITIONAL PROCEDURE VOLUME</td>
<td>COMMUNICATED</td>
</tr>
<tr>
<td>INCREASE STAFF &amp; PATIENT SATISFACTION</td>
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</table>
Appendix C

Stakeholder Analysis

**HIGH RISK – LOW RESOURCES**
- Inpatient Units
- Radiology Schedulers
- US Technologists
- Radiology RN
- Other Radiologists

**HIGH RISK – HIGH RESOURCES**
- US Procedure Technologists
- Charge RNS
- BI Radiologists
- BI NP
- Radiology Management

**LOW RISK – LOW RESOURCES**
- Hospital Staff Not Involved in Procedure

**LOW RISK – HIGH RESOURCES**
- Hospital Administration
- Patients
- Referring Services
## Appendix D

### Timeline

<table>
<thead>
<tr>
<th>June 1-15</th>
<th>June 16-30</th>
<th>July 5 – 6</th>
<th>July 11 - September 10</th>
<th>September 10 – October 31</th>
<th>November 1-5</th>
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<tbody>
<tr>
<td>Project Leader</td>
<td>Project team including RNs, technologist &amp; physicians</td>
<td>Project Leader and IRC</td>
<td>Project team</td>
<td>Project team</td>
<td>Project Leader</td>
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</table>

- Microsystem assessment Huddle created and presented
- Staff education Pre-Implementation Survey
- PSDA Cycle
- SDCA Cycle
- Post - Implementation Staff survey.
- EPIC data reports
Appendix E

Pre-Implementation Survey

BODY IMAGING HUDDLE MONKEY SURVEY

1. How often have you attended Body Imaging huddle in the past two months?
   - Never
   - Once
   - 2-6 times
   - 7 or more times

2. Please identify if you have experienced any of the following barriers during the huddle
   - Late arrival of members
   - Incomplete clinical information presented
   - Lack of role delination and responsibilities
   - Inability to attend rounds
   - Other (please specify) [___]

3. Please rate your satisfaction with the current BI huddle
   - Somewhat Satisfied
   - Not Satisfied
   - Satisfied
   - Neutral
   - Very satisfied

Thank you for your responses.
Appendix F

Pre-Implementation Survey Results

Between January and April 2016 did you attended Body Imaging Rounds?

Answered: 8  Skipped: 0

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<tr>
<th>Answer Choices</th>
<th>Responses</th>
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<tr>
<td>never</td>
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<tr>
<td>once</td>
<td>0.00%</td>
</tr>
<tr>
<td>2-6 times</td>
<td>37.50%</td>
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<tr>
<td>7 or more times</td>
<td>37.50%</td>
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<tr>
<td>Total</td>
<td></td>
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Appendix F

Pre-Implementation Survey Results Continued

Prior to May 2016 please identify if you have experienced any of the following barriers during the huddle

Answered: 6    Skipped: 2

<table>
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<th>Answer Choices</th>
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<tr>
<td>Late arrival of members</td>
<td>83.33%</td>
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<tr>
<td>Incomplete clinical information presented</td>
<td>66.67%</td>
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<tr>
<td>Lack of role delineation and responsibilities</td>
<td>66.67%</td>
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<tr>
<td>Inability to attend rounds</td>
<td>16.67%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>Responses</td>
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</table>

Total Respondents: 6
Appendix F

Pre-Implementation Survey Results Continued

Prior to May 2016 please rate your satisfaction with the current BI huddle

<table>
<thead>
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<th>Answer Choices</th>
<th>Responses</th>
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<tr>
<td>Somewhat Satisfied</td>
<td>40.00%</td>
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<tr>
<td>Not Satisfied</td>
<td>40.00%</td>
</tr>
<tr>
<td>Satisfied</td>
<td>0.00%</td>
</tr>
<tr>
<td>Neutral</td>
<td>20.00%</td>
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<tr>
<td>Very satisfied</td>
<td>0.00%</td>
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Total Respondents: 5
Appendix G

Post Implementation Survey Results

Please rate your satisfaction with the current BI huddle

Answered: 7  Skipped: 2

<table>
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<th>Responses</th>
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<tbody>
<tr>
<td>Somewhat Satisfied</td>
<td>0.00%</td>
</tr>
<tr>
<td>Not Satisfied</td>
<td>0.00%</td>
</tr>
<tr>
<td>Satisfied</td>
<td>71.43%</td>
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<tr>
<td>Neutral</td>
<td>0.00%</td>
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<tr>
<td>Very satisfied</td>
<td>28.57%</td>
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Total Respondents: 7
Appendix H

Pre-Implementation Process

PHYSICIAN

RN

HUDDLE

NBI NP

US TECH

- Reviews schedule between 0730 & 0800 day of procedure
- Communicates to inpatient referring services, sometimes via a EMR note sometimes via telephone call
- Residents may have other educational duties

- Attendance dependent upon staffing.
- Pre-procedure call not completed 100%.
- Assign nursing resource
- Inability to track patient through their stay due to lack of electronic patient tracking

- Attendance dependent upon staffing.
- No designation of who is responsible to attend

- Completes & presents outpatient.
- Completes inpatient work up
- Identifies urgent outpatient add-ons.
- Completes EMR orders
Appendix I

Post-Implementation Process