

USE OF HUDDLES TO DECREASE EMERGENCY DEPARTMENT BOARDING

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Abstract

ED boarding is national and requires senior leadership and full hospital participation to address the problem. The goal of this project was to implement evidence-based huddles to influence healthcare measures impacted by boarding. Boarding is defined by The Joint Commission (TJC) as the time when the decision has been made to admit or transfer the patient, and the patient is waiting in a temporary location. The measures that may be impacted include increased average length of stay (ALOS) of admitted patients, increased numbers of patients who leave the ED without being seen (LWBS), increased ambulance diversion, and decreased patient experience. The theory of high reliability is the conceptual framework around which the huddles will be implemented. COVID-19 and subsequent operational healthcare changes may have impacted the outcomes. ALOS did not improve. Following the education and implementation of the evidence-based huddles, the improvement in LWBS was statistically significant. There was no statistically significant improvement in ambulance divert and patient experience. While there was not a statistically significant difference, the changed huddle format was seen as an improvement by the participating charge nurses and nursing supervisors. The directionally correct trend in the data cannot be ignored, and the study should be replicated on a larger scale as part of an organization's ongoing performance improvement. The findings identified structured huddles as a viable tactic to improve patient flow and thus decrease ED boarding. Decreasing the national problem of ED boarding is foundational to improving hospital throughput.

Key words: huddles, debrief, huddle, communication, rounds, handovers

The Use of Huddles to Decrease Emergency Department Boarding

Boarding is not a new phenomenon in emergency departments across the United States. The challenge to address boarding does not lie solely with the ED. The terminology “ED boarding” is a misnomer and should be referred to as “hospital boarding” since The Joint Commission’s definition of boarding indicates the patient is waiting to be admitted or transferred to an [available] inpatient bed (The Joint Commission on Accreditation of Healthcare Organizations [TJC], 2013, The Joint Commission Perspectives, para. 4).

According to the Healthcare Council of Alberta and the researched hospital, ALOS of admitted patients is measured as the time the patient arrives to the emergency department to the time the patient leaves the department to go to an inpatient unit (Health Quality of Alberta, 2020, Patient emergency department total length of stay [LOS], para. 1). An extended ALOS causes a domino effect of patients in the lobby who are not yet examined by a provider and are awaiting a stretcher, but then leave without treatment and increase the LWBS rates. LWBS rate is defined as patients who leave after being triaged but before receiving a medical screening exam by a licensed independent practitioner (LIP) (Emergency Physician’s Monthly, 11 Benchmarks That Should Matter to Eps, 2019, para. 6). In the studied organization, a LIP is a physician or a nurse practitioner. Physician assistants do not practice in the organization and are not considered LIPs.

Solving the boarding problem is not simple, nor is one solution sufficient to fix the issue. Multiple tactics have been tested with varying degrees of success. One tested tactic is the use of huddles. Outside of the world of healthcare, huddles are a well-recognized phenomenon with research especially indicating the sports world as an avid proponent of huddles (Fiscella, 2016).

One area that has shown the positive effect of communication huddles is in physicians’ offices (Picciano & Winter, 2013; Rodriguez, Meredith, Hamilton, Yano, & Rubinstein, 2015).

Further studies indicate safety huddles are a proven best practice in an acute care setting to decrease falls, restraint use, catheter associated urinary tract infections (CAUTIs), and hospital acquired pressure ulcers (HAPUs) (Lubinensk, Kratzer, & Bergstol, 2015). However, the evidence is sparse around the use of huddles in hospitals to decrease ED boarding.

Problem Description

The ED in the researched hospital is similar to other EDs throughout the United States, where boarding is an issue. In 2014, The Joint Commission (TJC), in standard LD.04.03.11, defined ED boarding as the time when the decision has been made to admit or transfer the patient, and the patient is waiting in a temporary location (The Joint Commission on Accreditation of Healthcare Organizations [TJC], 2013, The Joint Commission Perspectives, para. 4). This location may include the ED or the Post Anesthesia Care Unit (PACU) (The Joint Commission, 2011, December). The most recent standards, reviewed August 2020 on TJC website, indicate no change to the definition. The United States General Accounting Office (GAO) gives a similar definition of ED boarding as, “the inability to admit a patient after a decision has been made to admit to inpatient or transfer to another organization” (Baker, & Esbenshade, 2015).

The chief nursing officer (CNO) of the researched hospital identified the extended ALOS in 2017 of 358 minutes of patients being admitted to the inpatient unit from the ED as a contributing factor to the medical center’s inability to serve the community. This inability to serve the community is measured by a hospital’s ambulance divert hours (Geiderman, Marco, Moskop, Adams, & Derse, 2015). Divert is defined as a mismatch between demand and the hospital’s resources to receive ambulances (Geiderman, Marco, Moskop, Adams, & Derse, 2015). The effect of boarding can be measured by data points of average ambulance divert

hours, ALOS of patients admitted to an inpatient unit, LWBS rates, and patient satisfaction scores of both patients waiting in the ED, and of those admitted to inpatient units from the ED. For the researched hospital at the time of the study, ambulance divert hours were up to 75/month, the LWBS rate was 2.65%, and the patient satisfaction scores were 70.51% top box.

One of the data points is the LWBS rate from the ED. While the national benchmark for LWBS is 2% (Pielsticker, Whelan, Arthur, & Thomas, 2015), the LWBS rate of the researched hospital was 2.65%. Second and third data points are ALOS and ambulance diversion hours. In 2018, the researched hospital had 31,690 ED visits, an ALOS of 279 minutes and longer ambulance divert hours. According to the health system's regional data collector, a neighboring hospital less than 10 miles away had a 1.8% higher volume (32,247 visits), and ALOS of 274 minutes. The senior team structure was not a factor in these data points as the two hospitals shared the same CNO, Director of Nursing (DON), and Chief Operating Officer (COO). Boarding contributes to ED overcrowding and is often noted as one of the reasons for an ED to experience congestion, subsequent long wait times, poor patient satisfaction, patients leaving without being seen (LWBS), medication delays, and other adverse patient events (General Accounting Office, 2003, March; Sri-On et al., 2014).

Several agencies such as The Agency for Healthcare Research and Quality (AHRQ) are involved in research of issues related to ED boarding (McHugh, Van Dyke, McClelland, & Moss, 2011). Two regulatory agencies, The Joint Commission (TJC) (The Joint Commission on Accreditation of Healthcare Organizations [TJC], 2013, The Joint Commission Perspectives, para. 4) and the Centers for Medicaid and Medicare Services (CMS) addressed the problem in 2011 and 2014 respectively by updating several standards to set expectations and targeted metrics to both limit boarding and to improve throughput nationwide (The Joint Commission on

Accreditation of Healthcare Organizations [TJC], 2013, The Joint Commission Perspectives, para. 4; Mullins & Pines, 2014).

There are three crucial reasons to improve ED throughput and to decrease boarding. The first is TJC review of documented goals and proven improvement metrics during their triennial surveys. CMS validates the measures when conducting their subsequent validation surveys. The second is the public reporting of ED metrics through CMS (Mullins, & Pines, 2014). The increasing savvy of consumers allows potential patients to “shop” for an ED where they feel they will be cared for quickly. The third is documented untoward outcomes for pediatric to adult patients who are boarding in the ED waiting for an inpatient bed (Lubinensk, Kratzer, & Bergstol, 2015). Negative outcomes may include medication errors, delay in administering medication for easily treatable diagnoses such as pneumonia and chest pain, and deep vein thrombosis (Sri-On, et. al., 2014). One positive component of being a patient in the ED is shorter critical care lab turnaround times compared to the times on an inpatient unit (Sri-On et al., 2014). However, research indicates the care of admitted patients in the ED is not an equivalent standard of care to that given by inpatient nurses (Sri-On et al., 2014). Joint Commission in standard LD.04.03.11 requires the care of inpatients be standard throughout the organization (The Joint Commission on Accreditation of Healthcare Organizations [TJC], 2013, The Joint Commission Perspectives, para. 4).

The internal hospital monitoring of throughput and boarding measures does not have to be onerous and may be easily monitored if included as part of a hospital’s quality improvement plan (QAPI). However, quality improvement interventions are not singular in nature, but are multi-disciplinary and require senior leadership commitment and oversight. Huddles may be part of the solution.

Available Knowledge

An exhaustive search of literature was conducted on the subject of ED boarding and the use of huddles. Search terms used were ED crowding, debrief, huddle, communication, collaborate, partner, rounds, and handovers. Databases used included ProQuest, CIANHL, Elsevier, and Capella's Summons search engine. Over 1200 articles were found using the listed terms.

Using the exclusion criteria of age or gender-related terms, public health, quality improvement and quality insurance, the number of articles was reduced to 423. Secondary exclusion criteria of specialties (e.g. peri-anesthesia, operating room) and physicians reduced the number of articles to 144. Final exclusion criterion of medicine decreased the number of articles to 44. To gain a broader understanding of huddles, several articles related to huddle implementation in medical practices were reviewed and included in the literature review.

Final inclusion criteria consisted of nursing, attitude of health personnel, collaboration, communication teams, cooperative behavior, clinical outcomes, decision-making, emergency medicine, nursing and evidenced-based nursing, safety, patient satisfaction, qualitative and quantitative research. Fifty articles were reviewed to determine causes of ED boarding and to identify evidence-based interventions.

Literature Review

The subject of EDs being over-capacity and stretching beyond the original capacity and intended use can be found in documentation of 1958 by Hartford Hospital in Hartford, Connecticut. The intent of the authors with Hartford Hospital was to survey medical leadership to determine the multiplicity of reasons that emergency departments were overcrowded beyond the original intent for an emergent care visit (Shortliffe, Hamilton, & Noroian, 1958). In a

position statement by the Emergency Nurses' Association (ENA), the reason for the continued overcrowding has been documented as being multi-faceted in nature and involves shrinking resources, population increases outpacing the growth of EDs, and increased acuity of patients seeking care in the ED (Stone & Winger, 2017).

The ENA statement documented ED boarding, or overcrowding, as being a national problem (Stone & Winger, 2017). According to the ENA statement, the terminology ED boarding is a misnomer, as boarding is a systematic issue that requires resources from external EMS partners, physician practices, internal hospital administration, and extended external intake partners including senior nursing facilities (SNF), home health care, and care managers (Stone & Wagner, 2017). In a guide for hospitals and a documented collaborative effort of five hospitals, authors indicated best practices may need to be written into law as many institutions have not implemented tactics that have recognized any sustained and predictable outcomes (McHugh, Van Dyke, McClelland, & Moss, 2011; McHugh et al., 2013). Originally, boarding had a broad definition of patients waiting in the ED to be admitted (Sri-On et al., 2014). Boarding has since become more specific and is defined as the time from decision-to-admit by an ED provider, to the time the patient is admitted to an inpatient bed (American College of Emergency Physicians, 2017; Farley, & Kwun, [2016]).

In October 2000, the American College of Emergency Physicians (ACEP) defined patient boarding as a "patient who remains in the emergency department after [being] admitted to the facility but [the patient] has not been transferred to an inpatient unit." The same definition was approved by ACEP in January 2007, April 2008, April 2011 and again in June 2017 (American College of Emergency Physicians, 2007, 2008, 2011, & 2017). ED boarding continues to be a problem affecting emergency departments nationwide and internationally. According to ACEP,

the problem of boarding does not belong solely to the ED but is a hospital-wide problem, which should involve a variety of administrators beyond the ED and other walls of the hospital (2017).

The ENA position statement has not changed but now includes other factors such as care of behavioral health patients who could be more appropriately cared for in a less chaotic environment (Stone & Wagner, 2017). The literature also lists multiple adverse outcomes impacted by ED boarding. Reasons include delays in care, increased adverse events, delays in medication administration (Sri-On, Chang, Curley, Carmajo Jr., Weissman, Singer, Liu, 2014), increased length of stay for ED patients who are discharged (White, Biddinger, Chang, Grabowski, Carignan, & Brown, 2013), increased mortality among critically ill patients (Jo, Jeong, Jin, Lee, Yoon, Park, 2015), increased ED crowding (Stone & Wagner, 2017), decreased patient experience results (American College of Emergency Physicians, 2017; Farley, Kwun, 2016), and decreased early intervention in patients with severe sepsis leading to increased mortality (Gaeski, Agarwal, Mikkelsen, Drumheller, Sante, Shofer, Goyal, Pines, 2017).

White et al. (2013) conducted a 3-year retrospective, observational, cohort study, in an academic urban tertiary care ED by comparing the median ED length of stay for discharged patients (stratified by patient acuity determined at triage) and a Spearman correlation between daily total board burden hours and median LOS (2013). The authors determined boarding and delays in admitting patients negatively impacted patients after discharge, affected the comfort of patients, and posed a safety risk for ED staff and patients (White et al., 2013).

According to Jo et al., in a post-hoc analysis of data from a previous retrospective study using multivariable logistic regression to adjust for potential confounding variables, boarding also had a negative impact on the mortality of critically ill admitted patients (2015). In a similar retrospective cohort study of patients admitted for severe sepsis, boarding was found to affect the

amount of time before septic patients received necessary interventions such as intravenous fluids and appropriate antibiotics even if protocols were in place (Gaijeski et al., 2017).

Once the decision to admit has been made, multiple evidence-based tactics are documented that decrease the stay of patients in the ED. Some hospitals have examined an input strategy by working to decrease the number of patients seeking care in the ED (Stone & Wagner, 2017). Others have chosen to address the problem while the patients are waiting for an inpatient bed, by bringing inpatient staff to the emergency department to assume care for admitted patients (Stone & Wagner, 2017). This may be an acceptable strategy, as it frees ED nurses to care for the continuous flow of patients arriving from the community. However, the boarding of such patients within the ED decreases the number of beds available to care for ED patients, potentially decreasing the LWBS rate.

The goal of the capstone project is to use a tactic referred to as huddles to improve communication and to decrease the boarding of inpatients in the emergency department. The explanation of huddles is similar across much of the research and is defined as short, stand-up meetings, communicated twice a day to ensure all staff are aware of specific information that will improve various facets of patient care (Lubinensky, Kratzer, & Bergstol, 2015; Quinn, Miltenberger, Abreu, & Narozanick, 2017).

Huddles have been used in physician practices to improve communication and workflow between providers (Picciano & Winter, 2013). Huddles were implemented in a Family Medicine Center after a 6-month multidisciplinary planning process (Picciano & Winter, 2013). Surveys were conducted after the implementation process, with an 85% response rate and again three years later, with a 79% response rate (Picciano & Winters, 2013). The results showed no statistically significant difference between the two surveys indicating communication had

improved as did office flow, and patient safety, which resulted in good patient care (Picciano & Winters, 2013). While the results indicated the huddles took more time, no one indicated the huddles made their job harder (Picciano & Winter, 2013). In a convergent mixed-method analysis of 79 team-type member interviews in six VA primary care practices, primary care providers “were less likely to report routine huddling” (Rodriguez, Meredith, Hamilton, Yano, Rubinstein, 2015). Those who did participate described improved teamwork and improvement in the practice environment (Rodriguez et al., 2015).

In an academic tertiary care children’s hospital, to close the communication gap between frontline staff and hospital administrators, Goldenhar, Brady, Sutcliffe, and Muething (2013) used a qualitative method of semi-structured interviews and focus groups to understand the huddle system and subsequent outcomes. Results identified huddles had the potential to remove the power distance often created by leadership making decisions without timely input of frontline staff (Goldenhar, Brady, Sutcliffe, & Muething, 2013).

For the capstone project, huddles were used to create a plan for admitted patients to be transferred from the ED environment to an inpatient bed in a timely manner, thus decreasing the ALOS of admitted patients and of those waiting in the lobby who may leave without being seen (LWBS) because of the extended wait time.

Rationale

In 2013, The Joint Commission (TJC) defined boarding as the time when the decision has been made to admit or transfer the patient, and the patient is waiting in a temporary location (The Joint Commission, June 2013). The definition and accompanying measurements went into effect January 1, 2014. Recent review of TJC site indicates the definition has not changed (The Joint Commission, June 2013). Because addressing ED boarding is a Joint Commission requirement,

the challenge of using evidence-based huddles in a community hospital was appropriate for a capstone project. Depending on the context, the word “huddles” and “summits” may be used interchangeably throughout the project.

Specific Aims

The goal of the project is to improve ED boarding by using evidence-based huddles. The measurements will be average length of (ALOS) of medical-surgical patients admitted from the emergency department (ED); the number of patients who leave without being seen (LWBS) from the ED; ambulance diversion hours; and the experience of patients (measured by overall rating of care in the Press Ganey database).

Methods

Stakeholder Input

The initial planned steps of the intervention were to discuss the capstone project with stakeholders who could be impacted by huddles. The stakeholders included nursing administration (CNO and DON), nurse managers, nursing supervisors, charge nurses from each patient care unit, ED physicians, hospitalists, and case managers. The goal of discussion was to introduce the capstone project, glean necessary support, and gather information that would assist in understanding current state and influencing change of future state huddles.

Management, Providers, and Case Management

Times for stakeholders to receive explanation of huddles were scheduled and varied depending on the invited participants. Initial meetings with the DON, ED medical director, and Manager of Case Management revealed huddles were called summits. The scheduled times were based on the need to validate nursing staffing at 0400, 1230, and 1630. The times were based upon when the staffing office would have someone available to receive the staffing update

information. Meetings with the case managers indicated they would only be able to attend the 1030 and potentially the 1630 huddle during weekdays. Case managers were not typically in the hospital during the other proposed times.

Part of the stakeholder input step was to find a hospitalist champion. During a meeting with the chief hospitalist, suggestions were made to meet with the hospitalists during a staff meeting and individually with any who were unable to attend the staff meeting. The chief hospitalist indicated participation would be successful only if the hospitalists understood what was “in it for them” and that any participation would only be on a trial basis. Following several attempts to meet either individually or together with the hospitalists, and after speaking with a particular one in person, the intention to include this group was changed.

An additional part of the stakeholder input step was to meet with the manager of the charge nurses, nursing supervisors, and case managers in the respective units to explain the capstone project and again verify times. Each manager scheduled the researcher at individual staff meetings for staff to hear, in person, the details of the project and to have an opportunity to ask questions.

Nursing Supervisors

Meetings with the nursing supervisors indicated the meeting times were built during an era when there were more eight hour shifts than the current 12-hour shifts. Other comments included wishing the child adolescent psychiatric unit (CAPU) attended as they needed resources but were often isolated and did not participate.

Charge Nurses: ED and Med / Surg

One stakeholder meeting included an enlightening one-on-one call with an ED charge nurse who was unable to attend the ED staff meeting. The feedback was more detailed and was

consistent with what was shared by the other ED charge nurses during the staff meeting. During these stakeholder meetings, the ED staff stated they have not found the 2130 huddle helpful because bed capacity and staffing were unlikely to change. If the ED staff was busy during this huddle, the ED charge nurse had not been attending. The ED staff indicated they would have liked a number to call-in as an option.

The ED staff stated the 0430 summit was viewed as the most helpful because the ED charge nurse could obtain admitting capability for inpatient and critical care and the nursing supervisor could ask about ED staffing. There was an observation that the birthplace charge nurse attended only to report out staffing for a particular patient population. According to the ED staff, there was a 2130 summit where surgical services reported on any remaining surgical patients and surgical cases for the next day. At that time, the ED staff would push to transfer patients out of the organization if there were no inpatient beds available.

At the 0430 huddle, if beds or staffing were tight, the ED staff would ask whether a bed/staffing change would occur within a few hours or whether it would be longer. If the time constraint was short, inpatient staff would ask if the ED staff could hold the patient and admit on the next shift. The format was relaxed and free flowing with no specific agenda and lasted 10 – 15 minutes. The location was in the back of the ICU with everyone sitting around a table. Other units would call in staffing, to place staff on-call if not needed, but the ED staff did not follow this process. A meeting with the medical / surgical charge nurses indicated huddle times were best for 0430 and 1630 but maybe not at 1030.

Survey Administration

Stakeholder input was gathered in the form of a survey adapted with permission from Dr. Anne Picciano, from a study, Benefit of Huddle Implementation in the Family Medicine Center

(Picciano and Winter, 2013). The primary author used a three-point Likert scale of agree, disagree, unsure (Picciano and Winter, 2013). The researcher for this capstone project chose a seven-point Likert scale compared to similar choices from the Press Ganey patient experience survey used within the organization and well understood by the leaders.

The survey (see Appendix A) was approved by the Capella and hospital Institutional Review Board and had seven questions. The first three were to gather data on demographics for descriptive statistics. Departments included in the descriptions were medical/surgical inpatient, emergency department, behavioral health, case management, and other. The second descriptive question was position in the hospital: RN, EDT/CNA, provider (MD/NP/PA), manager, associate nurse manager (ANM), care manager / crisis intervention specialist (CIS), c-suite leader, director, and other. The third was a “yes/no/I do not know” response to the question “do you currently participate in summits?”.

The next two questions, using a seven-point Likert scale of strongly agree, agree, somewhat agree, neither agree nor disagree, somewhat disagree, disagree, and strongly disagree, asked specifically about the summit’s purpose and length of time. The final two questions, using the same seven-point Likert scale, asked whether the current format facilitated the correct placement of patients and whether summits were helpful in completing work.

A seven-point Likert scale was used after careful research of appropriate number of available responses (Willits, F., Theodori, G., & Luloff, A., 2016). While more than seven options could confuse the participant, seven responses are straightforward and allow for differences in responses (Willits, Theodori, & Luloff, 2016). The Likert scale is measuring agreement in an ordinal or subjective fashion and indicates progressively increasing agreement.

Qualitative Analysis

After explaining the capstone process to the stakeholders, the next step was to observe huddles over a period of several weeks. The first huddle to be observed occurred at 1030 in early November 2019 in critical care. The researcher observed critical care rounds but no medical / surgical, ED charge nurse, or nursing supervisor present. When asked where the other participants were for the huddle, the critical care staff indicated this meeting was not the daily huddle but was critical care rounds. This further explained the intermittent 1030 time referenced previously by other stakeholders.

An actual huddle was observed mid-November 2019 at 1630. Some charge nurses were sitting, while others were standing. The huddle was facilitated by a nursing supervisor using a paper format. Participants included a charge nurse from birthplace, critical care, the medical / surgical unit, and surgical services. CAPU was not present. There were conversations between the ED staff and the medical / surgical charge nurse and the ED staff and surgical services charge nurse all occurring while various units were reporting staffing or unit status to the nursing supervisor. The researcher was informed the 2130 huddle occurs to make sure what was reported at 1630 is still accurate. The 0430 huddle occurs to share the plans for the day shift.

Further huddle observations were interrupted by circumstances related to the researcher's personal health and relocation. When observations were scheduled to resume, COVID-19 precluded any students from observing or practicing in healthcare organizations. Following an IRB approval to alter the format, all observations were changed to a virtual format.

Observations resumed using a virtual format in early May 2020. One of the changes during COVID-19 included moving the huddles out of the critical care department to decrease the risk of exposure to others during the virus outbreak. A specific phone was used for charge nurses to call in if they were unable to attend. Huddles were facilitated virtually for the

researcher. A slight format change was included for the nursing supervisor to introduce the researcher, remind the charge nurses of the explanation from Fall 2019 and again explain the purpose of the capstone.

At the request of one of the nursing supervisors, a document with the research references was emailed to the nursing supervisors, managers and charge nurses (see Appendix B). The manager of the nursing supervisors explained that huddles had to be more structured because the charge nurses now had to be off the units to participate. He suggested conducting the training in small sections to allow for immediate integration into current huddles. To respond to his request, the reference document also included steps to educate, implement, and validate (see Appendix C).

The researcher virtually observed the 0430 and 1630 huddles. Findings were consistent with the in-person observations from November 2019. The format was disorganized with no observable order or agenda. The ED charge nurse shared ambulance arrivals and how many patients were in the ED. It was difficult to follow the conversation due to the lack of a consistent agenda. Most of the huddles during that week lasted approximately six minutes.

Training

Training for the new evidence-based format began the second week of November 2020. At the beginning of each huddle, the different changes were introduced, explained, and implemented. The changes included explaining the elements of an evidence-based huddle: everyone standing; 10 – 15 minutes in length; standard agenda; all participants having the information to do their jobs by the end of the huddle. The researcher also asked for feedback at the end of the huddles to determine if the huddles felt better, worse, or the same as the previous format. The huddles were timed to validate they lasted no more than 15 minutes.

Following discussion with the manager of the nursing supervisors, a decision was made to share a written formatted agenda so the structure would be consistent throughout all of the huddles. Each department was to report on bed capacity, number of patients, expected admissions, expected discharges, any behavioral health patients, any patients with a risk for violence (RFV), current staffing now and any staff being placed on-call, and any other issues. The decided order for the huddle was ED, OR, Birthplace, ICU, and CAPU. Expectations were reiterated via email to the nursing supervisors by their manager.

Virtual guided observations occurred during the last two weeks of May. There was intermittent adherence to the agenda, most often when the nursing supervisor set the tone at the beginning of the huddle. The most productive huddles occurred at 1630. The 0430 huddle had the least amount of adherence to the agenda and intermittent conversations occurred, having little to do with staffing or patient placement.

Validation of Need

Following a conversation with the CNO, validation occurred by silent virtual observation to ensure key elements of structured agenda were hardwired. An email notification was sent to the nursing supervisors explaining the validation process. The validation occurred during the first week of June 2020.

Research Design and Setting

The research design is quantitative with a pre-and post- quasi experimental design. The purpose of this capstone project was to implement huddles to decrease the length-of-stay of admitted patients, which in turn should affect the left-without-being-seen rate, ambulance diversion, and the experience of patients in the emergency department. The setting was a community-based hospital with 143 inpatient beds and a 20-bed emergency department serving

over 30,000 patients per year as of 2018. The hospital's 143 licensed beds were divided into four inpatient units: 42 beds in the medical/surgical unit (eight considered overflow), 14 birthplace beds, 22 child and adolescent psychiatry, eight critical care, and eight same-day surgical beds. The emergency department's 30,000 patients were of varying ages and diagnoses per year.

The study involved observation of current huddles at 4:30 a.m. and 4:30 p.m. Following the observations, huddle education was based on evidence-based principles. Huddles are described as a "fast, high-paced, highly collaborative communication vehicle" (Provost, Lanham, Leykum, McDaniel, and Pugh, 2015). Research indicates huddles could improve patient flow (Lubinensky, Kratzer, and Bergstol, 2015; Picciano and Winter, 2013), and staff communication (Picciano and Winter, 2013). Huddles are also listed as an intervention used in organizations working towards high reliability as a means of communicating the potential for unsafe practice and as a vehicle to "optimize quality and safety outcomes" (Oster and Deakins, 2018).

Huddles should be interdisciplinary (Davis, 2015), completed while all participants are standing (Johnson, 2018) occur twice per day for 10 minutes or less (Davis, 2015), have a specific agenda, (Lubinensky, Kratzer, and Bergstol, 2015) and be initially facilitated by department leaders to model expected behaviors and then transitioned to charge nurses (Lubinensky, Kratzer, and Bergstol, 2015).

Intervention

The intervention to change the current format of the huddles was education based on evidence-based practices gleaned from the research. Formats from primary care offices (Picciano & Winter, 2013; Rodriguez, Meredith, Hamilton, Yano, Rubinstein, 2015), inpatient units, and emergency departments were used as a foundation to change the current format within

the organization. According to the CNO, the original huddles were not as organized as the neighboring hospital and did not appear to produce the expected outcome of smooth and timely patient movement.

The goal of the changed format was to have the huddles start on time, with a specific agenda, and provide consistent information that would be useful for the huddle team to facilitate the placement of patients and help in completing work. The team prior to and during the practicum period participating in the summits consisted of charge nurses and nursing supervisors. The charge nurses were from the emergency department, surgical services (only during the hours the operating room was functioning), labor and delivery, and the medical / surgical unit. The charge nurses from the child and adolescent unit (CAPU) rarely attended in person making it necessary for the nursing supervisor to contact them via phone for their information.

Historically, the role of the nursing supervisor was to facilitate the huddles. This was not changed during the practicum period. The role of each charge nurse was to bring and report out information on their total number of beds, expected admissions and expected discharges, staffing needs, any patients with a risk for violence (RFV), and any other relevant issues related to patient placement. The additional goal of the huddle was to reconcile any differences such as patients in the ED, critical care, or surgical services who needed placement, determine whether there was a bed available, and if not, when an expected bed would open.

Study of the Intervention

Charge nurses' and nursing supervisors' perception of the impact of the intervention was to be measured in five components. The first component measured perception of the huddles via a survey administered to charge nurses and nursing supervisors prior to and after the

implementation of the changed huddle. The survey consisted of three descriptive questions identifying whether the person participated in huddles; the primary department in which they worked; and the position they held in the hospital. These questions were reviewed using a descriptive analysis. The remaining survey questions measured feelings and impressions on a Likert scale to allow quantitative analysis. All five sets of numerical data were analyzed using descriptive statistics of mean and standard deviation and Mann-Whitney since the data was not normally distributed.

Measures

The quantitative measurements were average length of ED stay (ALOS) of medical-surgical patients admitted from the emergency department (ED), the number of patients who leave the ED without being seen (LWBS), and the experience of patients seen during the practicum period. Data for six months (January – June 2020) was compared to January - December 2019.

Patient experience is independently measured by Press Ganey. The medical center uses the indicator of top box for overall rating of care. Top box is determined by the number of patients who rate the ED a five where one is bad, two is very poor, three is poor, four is good and five is very good.

The fifth measure is ambulance divert defined as turning an ambulance away from arriving to the emergency department due to the space, equipment, or staffing limitations that cause the ED to be unable to safely care for an ambulance arrival (Geiderman, Marco, Moskop, Adams, & Derse, 2015). Although the hospital may be on ambulance divert, the status does not stop an ambulance patient without a pulse or respirations (e.g. code blue) from coming to the

ED. Ambulance divert also does not stop the flow of a patient walking or being brought to the ED via private car (Geiderman, Marco, Moskop, Adams, & Derse, 2015).

According to the research (General Accounting Office, 2003, March; Sri-On, et.al., 2014), these measures have been used in other studies to measure ED boarding. As ALOS, LWBS, and ambulance divert hours increase, patient experience declines.

Ethical Considerations

Mitigating Risks to Human Participants

Human participants in this study include nursing staff and leaders of the researched hospital who will be involved in the huddles to decrease ED boarding. Participant identity will remain anonymous because surveys to assess understanding of and satisfaction with current huddles will not be attached to any name. There are two identifying groups: job title and department. Continued anonymity will remain intact during the post-huddle surveys. The broad term “c-suite” is used as there are minimal participants in the executive suite and using such a broad term supports anonymity.

Risks to patients will be maintained as data reviewed in Tableau, EPIC, and Press Ganey will not be attached to patient identifiers or protected health information (PHI). There will be no observations on patient units, thus further protecting patients’ identity. Quantitative data is collected as a routine part of ED operations. Each of these measures are routinely evaluated on a regular basis as part of the ongoing performance improvement strategies of the ED. The data is consistently compared within each ED and between multiple system EDs to research trends by month, season, and year-over-year.

Collaboratively Engaging the Organization and Gaining Buy-In and Permission

The CNO gave permission for the study to be conducted. The project received IRB approval from Capella University the hospital system. Buy-in was obtained first from leaders during “Group” which is the nursing leadership meeting facilitated by the CNO. Further buy-in was gained during charge nurse meetings, shift report, and other venues identified by the individual department leaders. Prior to this study, attendance at huddles was mandatory as required by the duties of the job. Staff and leaders were informed that participation in taking the

survey for the capstone study would be appreciated but was voluntary and not required (Appendix A).

Managing Potential Conflict of Interest and Bias

Conflict of interest and bias were managed by anonymity of surveys and by the researcher wearing street clothes and a contractor badge during the observation period. Bias was managed by utilizing a skilled statistician to run and analyze data normally collected and run as a routine part of ED and inpatient operations.

Handling Issues Related to Intellectual Property

The Department of Health and Human Services (HHS) publishes an Electronic Code of Federal Regulations. Several items are of particular interest for this research project. The regulation requires the researcher to protect participants by recording information in a way that they will not put finances, reputation, educational advancement or employability at risk (Department of Health and Human Services. 2019, July 7). To meet these specifications, data gathered through the surveys was anonymous with only the job title and department described above and no use of names. The consent letter attached to the survey gave the participants permission to complete the survey if they chose without any effect on employment. They also could choose to not answer any questions that could make them uncomfortable. The survey also stated names would not appear in the responses (see Appendix A).

Pre-implementation surveys were changed to paper instead of a computerized version due to unexpected problems with data gathering software. Post-implementation surveys were paper only for the intensive care charge nurses at the request of the nurse manager. Surveys were computerized for the rest of the charge nurses and for the nursing supervisors. Outcomes and the

organization will be de-identified for reporting and writing purposes. No data or outcome results will be shared without the express written permission of the organization.

Managing HIPPA Compliance

According to the Center for Disease Control, the Health Insurance Portability and Accountability Act (HIPAA) was implemented by the Department of Health and Human Services (HHS.gov, 2015, April 16) in 1996 to protect the privacy of patients' personal health information (PHI) (HHS.gov, 2015, April 16). The goal of the act was to ensure information would be appropriately available to health and insurance entities but only with the patient's permission (HHS.gov, 2015, April 16).

The data reviewed as a part of this project did not contain PHI nor was it connected to any particular diagnostic group of patients. Data normally collected as a routine part of ED and inpatient operations does not have PHI nor does the organization trace the data back to a specific patient. Data is consistently reported in aggregate.

Following the American Nurses Association Code of Ethics

Fowler (2017) discusses the role of nurses in adhering to the American Nurses Association Code of Ethics by ensuring the dignity of humans is maintained even while maintaining a mindset of "scholarly inquiry" while conducting research. Dignity of patients will be maintained during this study by preserving and not publishing or sharing any PHI that may be discovered during the data collection period. Dignity of staff will be considered and maintained by maintaining the anonymity of survey results and not seeking to connect any one survey to any one employee. Employees' permission will be obtained prior to any huddle observations.

Conceptual Framework

The conceptual framework for this capstone was high reliability (Oster & Deakins, 2018). Highly reliable organizations (HRO) are defined by Oster and Deakins as ones that have a high possibility of error such as nuclear power plants and airlines where an error could be life-threatening and yet they operate error-free (2018). Five principles are foundational to the concept of high reliability. The principles include “sensitivity to operations, preoccupation with failure, deference to expertise, reluctance to simplify, and commitment to resilience” (Oster and Deakins, 2018).

The above guiding principles of HRO served as the basis for the capstone project. The principles align with the PICOT question of opening ED beds by decreasing the ALOS of admitted patients through the implementation of evidence-based huddles. The “emphasis on operations” was demonstrated by focusing on admitted patients as a particular class of emergency department patients. “Deference to expertise” is defined by Oster and Deakins (2018) as executive leadership providing the framework for change but allowing frontline staff the opportunity to use skills and capabilities to influence change. “Preoccupation with failure” was demonstrated by obtaining staff input prior to the data gathering period covering what functions well and where opportunities exist for improvement. “Reluctance to simplify” and “commitment to resilience” are ultimately demonstrated through the CNO’s request for the focus on huddle standardization aligned with evidence-based practice.

A similarly-sized neighboring hospital had successfully implemented shift huddles and had experienced the benefit of admitted patients being placed in a timely manner. According to the CNO who, at the time of the study, served both organizations, the hospital in the research study had been unable to form a stabilized format for effective huddles. The CNO believed the

current ineffective huddles are largely influencing the delay in finding appropriate beds and moving admitted patients to the inpatient unit in a timely manner. While huddles occurred at the researched hospital, they have not been as structured and, therefore, not as efficient or successful. The CNO's unwavering emphasis on ensuring that both hospitals function at a high level of expertise is evidence of a commitment to resilience and refusal to allow culture or history to prevent the organization from progressing.

An assumption was that study variables would be similar during the study months of 2020 when compared to months in 2019. Another assumption was that nursing turnover will not exceed historical averages, so similar nurses will complete a survey before and after huddle implementation. The population during the huddle implementation period of 2020 was assumed to be similar to similar months in 2019; number of inpatient and ED beds will remain unchanged; and, hospitalist coverage will be similar, thus not impeding or influencing admission of ED patients. An understood assumption was that hospital practice variation may occur during both pre- and post-implementation periods.

Analysis

Study Methodology

Case-wise deletion was selected as the most appropriate approach for handling missing data. Specifically, for each analysis, all observations with non-missing values for all variables relevant to that analysis were included. To enable quantitative analysis of the data, Likert items were scored. The assigned scores were as follows: 1 "Strongly Disagree" 2 "Disagree" 3 "Somewhat Disagree" 4 "Neither Agree nor Disagree" 5 "Somewhat Agree" 6 "Agree" and 7 "Strongly Agree". The goal was for participants to agree with the change in the summits (change in length of time, format, having an impact on the placement of patients and helping the

charge nurses and nursing supervisors to do their jobs. In general, the higher the Likert score, the higher the level of agreement with the statement or survey item. Mean scores should be interpreted according to these labels.

Descriptive Statistics

Pre and Post-Staff Survey. 44 pre- and post-intervention surveys were distributed for an overall response rate of 61% pre- ($n = 27$) and 66% post- ($n = 29$). The characteristics of survey participants in the pre and post group are presented in Table 1. All the study participants in the pre- ($n = 27$, 100%) and post-intervention periods ($n = 29$, 100%) reported participating in summits.

The majority of the participants in the pre-intervention ($n = 10$, 34%) and the post-intervention ($n = 8$, 30%) groups work in other departments and the ICU, respectively. Almost all participants in the pre-intervention group ($n = 25$, 93%) and post-intervention group ($n = 24$, 83%) were RNs.

Table 1

Characteristics of Participants in the Pre- Pre- (n = 27) and Post-Intervention (n = 29) Survey Groups

Variable	Post n = 29	Pre n = 27
Do you currently participate in summits?		
Yes	29 (100%)	27 (100%)
In what department do you primarily work?		
Behavioral Health	2 (7%)	4 (15%)
Emergency Department	3 (10%)	7 (26%)
Medical/Surgical Inpatient	5 (17%)	3 (11%)
Other	10 (34%)	0 (0%)
Other – Admin	0 (0%)	1 (4%)
Other - Admin, House Supervisor	0 (0%)	1 (4%)
Other – Administration	0 (0%)	1 (4%)
Other – Birthplace	0 (0%)	1 (4%)
Other – ICU	8 (28%)	8 (30%)
Other - ICU & med/surgery inpatient	1 (3%)	0 (0%)
Other – Maternity	0 (0%)	1 (4%)
Position in the hospital		
Other	5 (17%)	2 (7%)
RN	24 (83%)	25 (93%)

Note. Due to rounding errors, column wise percentages may not equal 100%.

Table 2 presents a summary of participants' responses to the pre- and post-intervention staff surveys. When asked whether the current summit format facilitates the correct placement of patients, the mean score was higher in the post-intervention survey ($M 4.52, SD = 0.91$) than in the pre-intervention survey ($M 4.15, SD = 1.10$). When asked if the summit lasted an appropriate length of time, the post-intervention group had a higher score on average ($M 4.83, SD 0.38$) than the pre-intervention group ($M 4.50 SD 0.96$).

Table 2

Summary Statistics for the Pre- (n = 27) and Post-Intervention (n = 29) Groups

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	Min	Max	<i>Mdn</i>
Format of Facility						
Post	4.52	0.91	29	1.00	5.00	5.00
Pre	4.15	1.10	27	1.00	5.00	5.00
Purpose of the current summit is clear to me						
Post	4.86	0.35	29	4.00	5.00	5.00
Pre	4.74	0.53	27	3.00	5.00	5.00
Summits are helpful in completing my work						
Post	4.28	1.22	29	0.00	5.00	5.00
Pre	3.68	1.39	28	0.00	5.00	4.00
Length of time summit lasted is appropriate						
Post	4.83	0.38	29	4.00	5.00	5.00
Pre	4.50	0.96	28	1.00	5.00	5.00

Note. '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

Average Length of Stay and Leaving Without Being Seen. The average length of stay (ALOS) in minutes of patients admitted to the inpatient area ($n = 364$) was lower in the pre-intervention period ($M 357.87, SD 255.20$) than in the post-intervention ($n = 183$) period ($M 374.31, SD = 348.46$). On average, the percentage of patients who left without being seen (LWBS) pre-intervention ($M 2.65, SD 2.54$) was higher than post-intervention ($M 2.17, SD 2.63$). The average LOS in minutes for Non-behavioral health patients (NBH) was higher in the post-

intervention [$n = 364$] period ($M 300.82$, $SD 88.58$) than in the pre-intervention [$n = 183$] period ($M 289.31$, $SD 56.67$). The results are presented in Table 3.

Table 3

Summary Statistics for Average Length of Stay in Minutes ED Patients to be Admitted by Pre- and (Jan – Dec 2019 $n = 364$) Post-Intervention Groups (Jan – June 2020 $n = 183$)

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	Min	Max	<i>Mdn</i>
Average Length of Stay (minutes)						
Pre	357.87	255.20	364	147.00	2865.57	294.60
Post	374.31	348.46	183	189.42	3697.18	305.37
Left without Being Seen (%)						
Pre	2.65	2.54	364	0.00	13.54	2.17
Post	2.17	2.63	183	0.00	11.63	1.35
Average Length of Stay (NBH) (minutes)						
Pre	289.31	56.67	364	147.00	630.47	284.70
Post	300.82	88.58	183	189.42	1068.59	292.46

Note. NBH – Non-behavioral health

Patient Experience. The mean Press Ganey patient experience top box score was 70.51 ($SD = 5.45$) and ranged from 61.1 to 79.0 in the pre-intervention period. The Press Ganey patient experience top box score was higher on average, during the post-intervention period ($M 74.48$, $SD 4.14$), and ranged from 71.3 to 82.3 (Table 4).

Table 4

Summary Statistics Table for Press Ganey Top Box Patient Experience for the Pre- (Jan – Dec 2019, n = 12) and Post-Intervention (Jan – June 2020, n = 6) Groups

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	Min	Max	<i>Mdn</i>
Press Ganey Patient Experience Top Box						
Pre	70.51	5.45	12	61.10	79.00	70.70
Post	74.48	4.14	6	71.30	82.30	73.15

Inferential Statistics

Pre- and Post-Intervention Staff Survey. The data are not examined per question but overall, per group. Data were not normally distributed. Table 5 shows the results of the two-tailed Mann-Whitney U test used to examine differences in responses to the item, “*The purpose of the current summit is clear to me*” by levels of study period. The post-intervention mean rank was higher (*MR* 29.7) compared to pre-intervention mean rank 27.2); however, this difference was not statistically significant ($p > .05$).

Table 5

Two-Tailed Mann-Whitney U Test for Clarity of Purpose of the Summit by Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) Groups

Variable	Mean Rank		<i>U</i>	<i>z</i>	<i>p</i>
	Post	Pre			
The purpose of the current summit is clear to me	29.71	27.20	426.50	-0.86	.388

Results from the two-tailed Mann-Whitney U rank sum test showed no statistical difference ($p > 0.05$) between the item “*The length of time the summit lasted is appropriate*” by levels of study period ($U = 462, z = -1.22, p = .222$) (Table 6). However, the post-intervention group appeared to agree more with this statement, compared with the pre-intervention group (MR 30.93 vs. 27.00).

Table 6

Two-Tailed Mann-Whitney U Test for Perceived Appropriateness of Summit Length of Time Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) Groups

Variable	Mean Rank		U	z	p
	Post	Pre			
Length of time the summit lasted is appropriate	30.93	27.00	462.00	-1.22	.222

Table 7 shows the results from the two-tailed Mann-Whitney two-sample rank-sum test used to examine differences in the participants’ *preferences for the format of the summit*, by study period. Although the post-intervention group appeared to agree more with the *format of the summit*, compared with the pre-intervention group (MR 31.19 vs. 25.61), there was no significant difference ($p > 0.05$) in *preferences for the format of the summit* by study period ($U = 469.5, z = -1.46, p = .144$).

Table 7

Two-Tailed Mann-Whitney U Test Comparing Satisfaction with Summit Format by Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) Study Period

Variable	Mean Rank		<i>U</i>	<i>z</i>	<i>p</i>
	Post	Pre			
Format of Summit	31.19	25.61	469.50	-1.46	.144

Table 8 presents the findings from the two-tailed Mann-Whitney U two-sample rank-sum test. Although the post-intervention group appeared to agree more with the *helpfulness of the summit*, compared with the pre-intervention group (*MR* 32.72 vs. 25.14), there was no significant difference ($p > .05$) between the groups, when asked if they *found the summits helpful for completing their work* ($U = 514, z = -1.85, p = .064$).

Table 8

Two-Tailed Mann-Whitney Test for Perceived Helpfulness of the Summits for Work Completion, by Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) by Study Period

Variable	Mean Rank		<i>U</i>	<i>Z</i>	<i>p</i>
	Post	Pre			
Summits were helpful in completing work	32.72	25.14	514.00	-1.85	.064

Press Ganey Patient Experience. Table 9 shows the results from the two-tailed independent samples *t*-test comparing Press Ganey patient experience ratings by study period. There was an increase in the mean scores between the pre- ($M 70.51, SD 5.45$) and post-

intervention (M 74.48, SD 4.14) periods. However, these periods were not statistically significantly different ($p > .05$).

Table 9

Two-Tailed Independent Samples t-Test for Patient Experience in the Rating of Emergency Room Care for Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) Study Periods

Variable	Pre		Post		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Press Ganey patient experience	70.51	5.45	74.48	4.14	-1.56	.137	0.82

Note. $N = 18$. Degrees of Freedom for the *t*-statistic = 16. *d* represents Cohen's *d*.

Length of time of the Summit. The two-tailed Mann-Whitney two-sample rank-sum test used to examine whether there was a difference in the groups perception of the *length of time of the summit* comparing pre- vs. post-intervention periods where pre- was higher but did not show a statistical difference between the pre- and post-intervention groups (U 10509.5, z -0.79, $p = .432$) (Table 10).

Table 10

Two-Tailed Mann-Whitney U Test for Length of Time of Summit by Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) Study Period

Variable	Mean Rank		<i>U</i>	<i>z</i>	<i>p</i>
	Pre	Post			
Length of Time of the Summit	158.55	149.73	10509.50	-0.79	.432

Average Length of Stay. The distribution of ALOS for the pre-intervention ($Mdn = 271.43$) period was lower but not significantly different from the distribution of ALOS for the post-intervention ($Mdn 279.11$) period ($U 32370, z -0.54, p = .592$) (Table 11).

Table 11

Two-Tailed Mann-Whitney U Test for Average Length of Stay by Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) Study Period

Variable	Mean Rank		U	z	p
	Pre	Post			
Average Length of Stay	271.43	279.11	32370.00	-0.54	.592

When comparing the pre- and post-intervention periods by the ALOS of non-behavioral health patients (NBH), though higher (pre- 268.39 minutes vs. post-285.15 minutes), there is no statistical difference ($U 31265.5, z -1.17, p = .242$) (Table 12).

Table 12

Two-Tailed Mann-Whitney U Test for Average Length of Stay by Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) Study Period

Variable	Mean Rank		U	z	p
	Pre	Post			
Average Length of Stay (NBH)	268.39	285.15	31265.50	-1.17	.242

Leaving Without Being Seen. A two-tailed Mann-Whitney U two-sample rank-sum test was conducted to examine if there were significant differences in LWBS by study period (Table 13). A statistically significant higher number of patients LWBS during the pre-intervention

period (MR 287.56 compared with the post-intervention period (MR 248.45, U 38165.5, z -2.76, $p = .006$).

Table 13

Two-Tailed Mann-Whitney U Test for Leaving Without Being Seen (LWBS) by Pre- (Jan – Dec 2019) and Post-Intervention (Jan – June 2020) Study Period

Variable	Mean Rank		U	z	p
	Pre	Post			
LWBS	287.56	248.45	38165.50	-2.76	.006

Results

The largest majority of the survey participants identified as nurses in the pre- (93%) and post-intervention (83%) period. All who participated in the survey (pre- $n = 27$, post- $n = 29$) answered as currently participating in the summits. The summit participants' feedback of the summit was mixed. While not statistically significant ($p > 0.05$), questions about purpose of the summit being clear, the length of time of the summit being appropriate, format of summit facilitating patient placement, and whether the summit was helpful in completing work showed an improvement from the pre- to post-intervention study period.

LWBS was the only element that improved with statistical significance ($p = .006$). The measurement of top box of patient experience improved from 70.51% to 74.48% but was not statistically significant. Ambulance diversion was not statistically analyzed. However, there was an average of 75 hours per month in January – December 2019 compared to an average of 58 hours per month January – June 2020. ALOS did not improve and trended in a negative direction but was not statistically significant.

Discussion

According to the research of Oster & Deakins (2018), the General Accounting Office (2003), and March, Sri-On et al. (2014), patient experience decreases as boarding hours increase. Although patient experience results of this project measured from January – December of 2019 compared to January – June of 2020 were not statistically significant, patient experience results showed a directional trend consistent with other findings of other research.

According to Pielsticker, Whelan, Arthur, & Thomas, (2015), LWBS rates are to be <2%. The General Accounting Office (2003) and March, Sri-On et al. (2014) identified boarding as a contributor to higher LWBS rates. The implementation of huddles had a statistically significant impact on the LWBS rate decreasing the average rate from 2.65% during January to December 2019 to 2.17% in January – June 2020.

Research by the General Accounting Office (2003) and March, Sri-On et al. (2014) also indicated ALOS decreased as boarding decreased. However, in this project, pre-intervention ALOS was 357.87 minutes compared to the post-intervention period of 374.31 minutes indicating huddles did not have a statistically significant impact.

Summary

The change to the huddle format was well-received by the nursing supervisors and charge nurses as evidenced by adherence to the format with little to no prompting. Though not statistically significant, in the Likert scale quantitative analysis, the survey results showed improvement from the pre- implementation to the post-implementation period.

The data of LWBS, patient experience and ambulance divert also showed improvement in the analysis of the mean from the pre to the post-implementation period. However, the Two-Tailed Mann-Whitney U Test indicated the differences between the pre- and post-survey for

patient experience before and after the huddle implementation was not statistically significant. In contrast, the LWBS rate improved and was statistically significant

Aside from the statistical findings, the project had research-based strength due to the use of structured huddles in other healthcare venues. The use of safety huddles has also been successfully implemented in the researched hospital and other highly reliable organizations (HROs) to decrease serious safety events and to provide prevention strategies when staff identified near miss opportunities. Based on the success in HROs, this project of using huddles to decrease ED boarding can be viewed as an appropriate process.

While not tested in this project, according to Picciano and Winter, the use of structured huddles for patient placement can improve communication (2013). Also, when a healthcare organization starts a performance improvement project, results are measured in data improvement and not necessarily using statistical significance.

Interpretation

The findings of the capstone align with other HROs that have implemented safety huddles. In a highly reliable organization, a huddle is a venue for leaders and staff to speak up for safety when an incident has occurred or potentially can occur that could cause harm to a patient (Oster & Deakins, 2018). As with similar literature, the conclusion can be drawn that huddles improved the patients' experience by decreasing patients leaving without being seen (Oster, & Deakins, 2018).

There is no additional cost associated with implementing this change to the huddles. The improvement to patient care and moving patient out of the ED to a more stable venue to begin the admission process is a contributing benefit to standardizing the huddles (Oster, & Deakins, 2018).

Limitations

The study was impacted by the novel Coronavirus reported first in Wuhan, China January 2, 2020 (World Health Organization, 2020, February 16 - 24). While initial cases and deaths were first reported in Asian countries, the first case in the US occurred in the state of Washington on January 20, 2020 (Harcourt et al, 2020). Oregon, a neighboring state to Washington, was not far behind and reported its' first presumptive case on February 28, 2020 (Oregon Health Authority, 2020, February 28).

Although China worked on an extensive report that recommended quick action, isolation of cases and being agile in responding, the virus began to spread in the United States quicker than ever expected. On March 11, 2020 a worldwide pandemic was declared by the World Health Organization and on March 13, 2020 the United States declared a national emergency (Centers for Disease Control and Prevention, 2020, March 18). This declaration resulted in shut down of public buildings, sports events, restaurants, student practicums and clinicals Capella University placed all student placement and in-person education on hold. This influenced the timing of summit education.

The pre-summit survey was initiated November 2019. The training was to be initiated in March 2020 when air travel was limited, and in-person practicums were suspended indefinitely. As it became apparent the pandemic had no foreseeable end, Capella University offered the option for e-practicum hours. Following IRB approval, arrangements were made through the organizations leadership team to listen via conference line into current summits, provide training, and validate compliance.

There was no physician participation as physicians found huddles of little value and potentially hindering effective flow along with the ability to complete a full assessment of

patients in a timely manner. This limitation was expected as Rodriguez et al. identified similar limitations (2015). No research was located to show the effectiveness of huddles on appropriate patient placement or subsequent effect on emergency department metrics. While huddles have been successfully implemented in other settings, the difference in the PWF setting may limit similar successes.

Ambulance divert data is self-reported by the ED which could bring into question the validity and ensuing change as a result of huddles. Johnson indicates huddles should be committed to for at least six months due to “competing priorities” that can interfere with making huddles a best practice (2018). According to Simon, high reliability organizations require “leadership commitment” (2018) which can be relatively easy to assess but difficult to assure for continued implementation during this limited practicum period.

Other interventions, including further implementation of high reliability, are continually being implemented and followed in the researched health system. These interventions include communication in SBAR format (Subject, Background, Assessment, Recommendation), STAR (Stop, Think, Act, Review), speaking up for safety, paying attention to detail, and CUS (Concern, Uncomfortable, Stop) and are identified by Padgett et al. as good communication methods for improving patient safety (2017).

COVID-19 had additional impact on the huddle. The original location was the rear of the ICU. Due to COVID-19, the location was changed to a conference room with a SYSCOM conference phone. By the end of May, the location returned to the rear of ICU with no conference phone. This change in venue made it difficult to hear the details during the validation period.

Virtual observation, training, and validation was also a challenge. The number to call into the huddle changed several times to accommodate both normal operations and changes related to movement for COVID-19. On one occasion, the number given to the researcher was a patient room. On a second occasion, the security department had been assigned to the conference room. The researcher was not notified of the venue change of the huddle and coinciding phone number change.

Conclusions

The usefulness of the capstone project lies in the outcome of decreased average length of stay of patients being admitted to inpatient from the ED, ambulance divert hours and LWBS. The improvement of patient experience cannot be ignored. The sustainability of the project is only possible if the organization's leadership team sets expectations and holds the nursing supervisors accountable.

Accountability should include following the agenda and gaining information in an organized manner for charge nurses to move patients from the ED in a timely manner. The CNO has set the expectations that the huddles would change to an evidence-based format. For this to occur, the nursing leadership team, beginning with the unit and nursing supervisor managers, would need to collaborate on a unified message plan and a way to both incentivize and hold accountable the team to follow the process. Sustainability will only occur if expectations are set and measured until they are hardwired. Performance improvement occurs when measured regularly until sustained then measured again intermittently to maintain consistency. To obtain that consistency, a longer education period should occur along with an extensive observation and validation period.

The benefits to patient care, department-to-department communication, patient experience, decreased boarding in the ED, and subsequently the organization, cannot be underestimated.

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*Appendix B***Huddle / Summit Evidence****Bonnie Wilson, BSN, MBA, RN, NEA-BC****Capella University Doctoral Student****April 2020****Available Knowledge**

An exhaustive search of literature was conducted on the subject of ED boarding and the use of huddles. Search terms used were ED crowding, debrief, huddle, communication, collaborate, partner, rounds, and handovers. Databases used included ProQuest, CINAHL, Elsevier, and Capella's Summon search engine. Over 1200 articles were found using the listed terms.

Using the exclusion criteria of age or gender-related terms, public health, quality improvement and quality insurance, the number of articles was reduced to 423. Additional exclusion criteria of specialties (e.g. peri-anesthesia, operating room) and physicians reduced the number of articles to 144. Final exclusion criterion of medicine decreased the number of articles to 44. To gain a broader understanding of huddles, several articles related to huddle implementation in medical practices were reviewed and included in the literature review.

Final inclusion criteria were nursing, attitude of health personnel, collaboration, communication teams, cooperative behavior, clinical outcomes, decision-making, emergency medicine, nursing and evidenced-based nursing, safety, patient satisfaction, qualitative and quantitative research. In total, 50 articles were reviewed to determine causes of ED boarding and to identify evidence-based interventions.

Research indicates huddles could improve patient flow (Lubinensky, Kratzer, & Bergstol, 2015; Picciano & Winter, 2013), and staff communication (Picciano & Winter, 2013). Huddles are listed by Oster and Deakins as an intervention used in organizations working towards high reliability as a means of communicating the potential for unsafe practice and as a vehicle to “optimize quality and safety outcomes” (2018).

Huddles should be interdisciplinary (Davis, 2015), completed while all participants are standing (Johnson, 2018) occur twice per day for 10 minutes or less (Davis, 2015), have a specific agenda, (Lubinensky, Kratzer, & Bergstol, 2015) and be initially facilitated by department leaders to model the expected behaviors and then transitioned to charge nurses (Lubinensky, Kratzer, & Bergstol, 2015).

Appendix B

June 8, 2020

We are asking for your help to review the quality of the newly implemented summits here at The Medical Center.

We are doing a study to find out about the quality of summits. We want your feedback on whether you find them more helpful in correctly placing patients.

We hope this study will help us evaluate the new summit format. We also have implemented some of your suggestions into the new format.

Your participation in this study consists of you filling out a survey. This is the second of two surveys. The first was completed in November and December 2019 at the beginning of the study. This is an identical survey but is being completed at the end of the study to evaluate the new format. It should take less than 10 minutes.

As before, the survey will ask about the benefit of the new summits, and this may make you uncomfortable. If a question makes you uneasy, you can choose to not answer it. You do not have to take part in this study. Neither your employment at PWFMC nor your benefits will be affected if you choose to not take part.

Your name will not appear in the responses. I will be the only one who will have access to your responses. The results will be shared with the nursing and physician staff, but they will not be able to identify you. If results from this survey are ever published, or presented at a meeting, your identity will remain secret.

You will not be paid to take part in this survey.

By completing the survey below, you are agreeing to take part in this study. If you have questions about this letter or the survey, you may call Bonnie Wilson at (240) 675-6776.

Please place your completed survey in the envelope provided by your manager. Thank you for your time and assistance.

Sincerely,
Bonnie Wilson, DHAc, BSN, MBA, RN, NEA-BC
Capella University Doctoral Student

Huddle Implementation

Adapted with permission from the survey in *Benefit of huddle implementation in the family medicine center* by Picciano and Winter (2013).

1. In what department do you primarily work

- a. Medical/Surgical Inpatient
- b. Emergency Department
- c. Behavioral Health
- d. Case Management
- e. Other (please specify) _____

2. What is your position in the hospital

- a. RN
- b. EDT/CNA
- c. Provider (MD/NP/PA)
- d. Manager
- e. ANM
- f. Care Manager / CIS
- g. C-Suite Leader
- h. Director
- i. Other (please specify) _____

3. Do you currently participate in summits

- a. Yes
- b. No
- c. I do not know

4. The purpose of current summits is clear to me

- a. Strongly agree
- b. Somewhat agree
- c. Agree
- d. Neither agree nor disagree
- e. Disagree
- f. Somewhat disagree
- g. Strongly disagree

5. The length of time summits last is appropriate

- a. Strongly agree
- b. Agree
- c. Somewhat agree
- d. Neither agree nor disagree
- e. Somewhat disagree
- f. Disagree
- g. Strongly disagree

6. The current summit format facilitates the correct placement of patients

- a. Strongly agree
- b. Agree
- c. Somewhat agree
- d. Neither agree nor disagree
- e. Somewhat disagree
- f. Disagree
- g. Strongly disagree

7. I find summits to be helpful in completing my work

- a. Strongly agree
- b. Agree
- c. Somewhat agree
- d. Neither agree nor disagree
- e. Somewhat disagree
- f. Disagree
- g. Strongly disagree

Appendix C

Steps to Implement Huddles / Summits

Week One

Day One

Introduce the evidence behind huddles and validate times

Day Two

Understand and verify current understanding of huddle agenda and amount of time

Day Three

Ask all participants to remain standing during huddles

Day Four

Share observations: standing, agenda, time allotted and completed, adherence to agenda

Day Five

Ask whether this feels any different than original summits

Week Two and Three

Observation

Week Four

Re-do survey and data abstraction

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