Pain Assessment in the Acute Care Setting

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Abstract

Pain assessment and management are dominant issues in the healthcare setting confounded by the opioid epidemic. As healthcare improves based on the best evidence available, it is clear that pain assessment viewed in a holistic manner is a key approach moving forward. The use of the Clinically Aligned Pain Assessment© (CAPA©) takes into consideration the multi-dimensional aspects of pain. The purpose of this evidence-based practice project is to evaluate the effect of an alternative pain assessment, CAPA©, on patient satisfaction with nurse communication and pain management, and it's influence on nursing self-efficacy. Nurses in an adult medical-surgical acute care unit were provided education and coaching on using CAPA© instead of a traditional numeric rating scale. Adherence to CAPA© performance was measured during the project period. Comparison of patient satisfaction prior to and after the implementation of CAPA© did not reveal a consistent improvement in results. Nursing self-efficacy demonstrated no statistically significant improvement overall. However, data from this evidence-based practice project demonstrated a statistically significant increase in self-efficacy scores for nurses with longevity on the unit. Adherence data collected during the implementation of CAPA© showed higher than expected rates of adherence when compared to similar practice changes. The CAPA© instrument implementation did not result in overall improvements in patient satisfaction and nursing self-efficacy. These findings suggest there is more work to be done when it comes to improving pain assessment, and that CAPA© may not be the ideal instrument to move pain assessment practice forward in all practice settings and with all clinician experience levels.

Keywords: CAPA© instrument, pain assessment, self-efficacy, patient satisfaction, adherence

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Pain Assessment in the Acute Care Setting

Pain management in healthcare is evolutionary while variant. The American Pain Society, the World Health Organization, and the U.S. Agency for Health Care Policy and Research each made attempts to improve pain guidelines, but to date have not been overly successful. In 2001 the Joint Commission attempted to address the lack of consistent assessment and treatment of pain by creating standards to be maintained for hospital accreditation (Baker, 2017). These new standards resulted in an increase in aggressive pain assessment and treatment, including increased opioid prescription and administration (Baker, 2017). Because of the significant increase in opioid prescribing and subsequent opioid epidemic in the United States, the Joint Commission is working to change standards to ensure more appropriate assessment and treatment of pain commiserate with the best evidence available (Baker, 2017).

Background

Pain is often touted as the fifth vital sign. However, Scher, Meador, and Reid (2017) suggest that the numeric rating scale (NRS) for pain does not improve pain management for either acute or chronic pain. Furthermore, in 2016, the American Society of Pain Management Nursing (ASPMN) released a position statement regarding opioid prescription and administration in relation to pain intensity (Pasero, Quinlan-Colwell, Rae, Broglio, & Drew, 2016). The NRS quantifies pain by asking a patient to assign a number from zero to ten that is representative of their pain, and is commonly used in the healthcare setting. However, the NRS is a subjective scale that may not be understood by every patient. Providers who apply the NRS often instruct patients that 0 equates to no pain and 10 is the worst pain of one's life. This description does not account for individual differences in how a person feels and interprets their own pain, and attempts to place an objective number on a subjective experience. As an example, if a patient

never encountered a truly painful experience, a stubbed toe may be the worst pain of their life. Conversely, a patient who has had pancreatitis may report the shattered femur they are experiencing as a 5 on the NRS. By treating the number without complete understanding of that number, there is the potential to over- or under-treat patients.

Patient satisfaction scores are tied to reimbursement by the Centers for Medicare and Medicaid Services (2017). Scher et al. (2017) question this practice because patient satisfaction reports have the potential to pressure providers to achieve positive patient satisfaction scores in order to receive reimbursement. Such a structure incentivizes providers to achieve great scores irrespective of circumstance. Thus, patients may unwittingly have their safety compromised in exchange for patient satisfaction via inappropriate medication regimens. Innovative strategies to adequately address pain and improve patient satisfaction with the quality of pain management are needed.

The ASPMN statement recommended that pain management, as with any medical treatment, should be individualized and comprehensive. Pain is often more complex than a number can capture (Pasero et al., 2016). Many hospitals require linkage of pain medication orders to a pain intensity assessment, but do not take into account other critical patient factors such as sedation level, comorbidities, age, or respiratory depression. Based on these factors, the ASPMN's position is:

> "The practice of prescribing doses of opioid analgesics based solely on a patient's pain intensity should be prohibited because it disregards the relevance of other essential elements of assessment and may contribute to untoward patient outcomes, such as excessive sedation and respiratory depression as a result of overmedication" (Pasero, et al., p. 174).

This position statement points to a need for a comprehensive approach to pain management through a thorough assessment of the patient and their pain. A review of literature was conducted to determine the best practice for pain assessment in an adult medical-surgical acute care unit.

Review of the Literature

Search Strategy

Articles were identified using a search of the electronic databases EBSCOhost and Ovid. Search terms included "pain measurement," "pain assessment," "functional pain scale," and "inpatient pain management." Articles were limited to adults by including the phrase "not pediatrics". The search was restricted to publications from 2008-2018 and limited to the English language. An ancestry search was also completed and provided 4 additional articles.

A gray literature search was also conducted using Google Scholar© with a time limit of 2 hours. This search revealed 4 applicable articles, including a position statement and review of the history of the Joint Commission standards for pain assessment and treatment.

Selection of Articles

After completion of the search and removal of duplicate articles, 465 articles remained for review. A title review decreased this number to 26 articles. Inclusion criteria were articles that address pain assessment in a healthcare setting through the use of pain measurement beyond the standard NRS. Exclusion criteria comprised pediatric patients, articles published prior to 2008, articles without discussion of a pain assessment, and articles which focused on alternative modalities for pain management instead of pain assessment. A review of abstracts further reduced this to 10 articles read in full. Three of these articles that were read in full were subsequently excluded. Seven publications met all criteria and were included (Table 1). A PRISMA flow diagram for article selection is displayed as Figure 1.

Of the 3 articles that were fully read and excluded, the first was a comparative article looking at patient preference for multiple different pain assessment methods by Sayin and Akyolcu (2014). It was excluded because it was conducted in a population in which 99.5% of the patients stated they had never been assessed by a pain intensity scale (Sayin & Akyolcu, 2014). Without previous understanding of pain intensity scales, the use of an alternative scale is not generalizable to a population currently familiar with the NRS.

The other two fully read articles authored by Lin, Reid, Chused, and Evans (2016), and Hanna, Gonzalez-Fernandez, Barrett, Williams and Pronovost (2012) were subsequently rejected because both evaluated quality of pain management and patient satisfaction with pain control, but did not include a pain assessment other than the NRS. While information on patient satisfaction with pain management in the healthcare setting is crucial, for the purposes of this evidence-based practice project, it does not address the use of pain assessments outside the NRS.

Pain Instruments

Upon review of the remaining studies, there is consensus that a pain assessment tool to evaluate the many facets of pain is needed; however, the best practice for pain assessment remains to be determined. Of the seven studies reviewed, five offered pain assessments other than the NRS. The four instruments in these studies included the Clinically Aligned Pain Assessment© (CAPA©) (Donaldson & Chapman, 2013; Topham & Drew, 2017), the Brief Pain Inventory (BPI) (Jabusch, Lewthwaite, Mandzuk, Schnell-Hoehn, & Wheeler, 2015), PEG score (Krebs et al., 2009), and Overall Benefit of Analgesic Score (OBAS) (Lehmann et al., 2010). Each of these instruments were evaluated for application in the inpatient acute care setting as an alternative pain scale to the NRS below.

Clinically Aligned Pain Assessment© (CAPA©).

The CAPA© instrument is an alternative to the NRS that clinicians can incorporate into the care of patients in an inpatient acute care setting. It is a pain assessment instrument that uses a conversation between the nurse and the patient to evaluate multiple facets of pain, taking into account the patient's functional status rather than a single intensity score. The five aspects of pain that CAPA© addresses are mobility, sleep, changes in pain, comfort, and efficacy of the patient's current pain management regimen (Topham & Drew, 2017). The two studies that evaluated the CAPA© tool had similar stated improvements in patient and nurse satisfaction scores (Topham & Drew, 2017; Donaldson & Chapman, 2013). Topham & Drew (2017) found 80% of nurses felt CAPA© improved communication with their patients and 66% of nurses preferred CAPA© to the NRS. Donaldson & Chapman (2013) stated that patients and nurses strongly preferred the CAPA© to the NRS.

Brief Pain Inventory (BPI).

The BPI has a short and long version, the short form was evaluated by Jabusch, et al. (2015). The short form BPI "consists of four pain severity items and seven items related to pain interference with daily activities rated on scales of 0 to 10" (Jabusch et al., 2015, p. 71). Jabusch et al. (2015) used the BPI in the assessment of 88 patients in an inpatient acute care setting in order to establish the frequency of pain, as well as the perception of staff caring about the patient's pain. This study found that 70.4% of patients had moderate to severe pain during their inpatient stay and 84% of the patients felt that staff did everything they could for their pain.

PEG Score.

The PEG score is a sum of three specific pain assessments: pain intensity, enjoyment of life, and general activity. One advantage of the PEG score is that it allows for a brief pain

assessment that extends beyond simply the pain intensity. Krebs et al. (2009) compared the PEG score to the BPI in the outpatient setting in order to validate the use of the PEG score. The authors evaluated 1,146 patients over the course of a year to establish reliability of the PEG and found a Cronbach's alpha of 0.73, making PEG a statistically reliable pain assessment (Krebs et al., 2009). However, this study was conducted in the outpatient setting limiting its generalizability to the inpatient setting.

Overall Benefit of Analgesic Score (OBAS).

Lehman et al. (2010) evaluated the OBAS in four randomized controlled trials in multiple post-operative patient populations. The OBAS is a "multi-dimensional tool that assesses pain intensity and opioid-related adverse effects and also patient satisfaction…designed to guide postoperative pain therapy in daily clinical practice" (Lehman et al., 2010, p. 512). The OBAS measures how pain interferes with daily activities to include general activity, mood, walking, normal work, relationships, sleep, and enjoyment of life. The authors found that patients reported pain 70.4% of the time, but also reported hospital staff "always" or "sometimes" did everything possible for the patient's pain 96% of the time. This satisfaction rating with pain management suggests the OBAS is a beneficial instrument for this population. While this study found benefit in the use of the tool in post-operative patients, it did not evaluate its use in any other population. Patients had high rates of satisfaction with pain management, but it is unclear what treatments, if any, the patients received for their pain.

Pain slope.

One study conducted by Chapman, Donaldson, Davis, and Bradshaw (2011) did not incorporate an instrument; instead, the investigators evaluated pain as a trajectory. The investigators used a convenience sample of 711 patients who had an elective surgery at an

academic medical center. When looking at the slope of pain, the investigators found that 12% of patients had a positive slope, in which pain was worse 6 days postoperatively compared to 63% of the sample who had a negative slope with resolution of pain 6 days after surgery (Chapman et al., 2011). This evaluation of pain trajectory has implications for evaluating a subset of patients who may need more pain management assistance in order to improve postoperative pain management. However, the investigators did not consider any psychosocial factors that impact pain. It also did not offer alternatives for pain assessment in order to improve patient care.

Randomized controlled trial.

The final study conducted by Chooi, White, Tan, Dowling, and Cyna (2013) did not implement an alternative pain assessment; instead they changed the verbiage for the pain assessment used in practice. The authors conducted a randomized controlled trial with 300 caesarian section patients in which half of the participants were asked about pain level using the standard NRS while the other half were asked an inverse comfort scale. For their purposes, 0 indicated completely uncomfortable, and 10 indicated completely comfortable. The authors found that when asked about comfort as opposed to pain, patients associated discomfort with healing and recovery, while the patients in the pain group associated their discomfort with tissue damage. The authors also noted patients were less likely to request pain medication when asked about comfort instead of pain (4.7% in pain group vs. 2.7% in comfort group). This study is limited in that the researchers were the only healthcare providers who addressed pain and comfort in a standardized manner in congruence with the assigned study cohort, which may have had unrealized impacts on the results. The remainder of the staff continued with their standard practice, likely asking about pain with every encounter without regard to patient participation in the study. Furthermore, this study used an inverse scale for comfort, which has not been

validated as being an inverse scale from the NRS. The authors also suggested that comfort is not the opposite of pain, but cited that there is not a good antonym for pain to be used in assessment (Chooi et al., 2013).

Based on the above literature, CAPA© is the most appropriate pain assessment to be implemented into the inpatient, acute care medical-surgical setting. As such, CAPA© was implemented to evaluate its efficacy for improving patient satisfaction and nursing self-efficacy in the chosen setting.

Frameworks for Implementation

A combination of a conceptual framework, *Influencer* (Grenny, Patterson, Maxfield, McMillan, & Switzler, 2013), and a theoretical framework, self-efficacy (Bandura, 1977) were used in this project. The *Influencer* framework (Grenny, et al., 2013) was used to provide a methodology for project implementation. Self-efficacy theory (Bandura, 1977), was used as a basis for evaluation of project efficacy.

Influencer principles.

The book *Influencer* (Grenny, et al., 2013) provides a framework for change management that was used to implement this evidence-based practice project. The framework incorporates 6 sources that need to be impacted in order to effect change (Grenny, et al., 2013). The more sources that are positively influenced during the change process, the more likely that the change will be effectively implemented. The six sources highlight motivation and ability as related to personal, social, and structural aspects of the change (Grenny et al., 2013). Each of these sources were addressed in order to improve the likelihood of success during this project.

With respect to personal motivation, this project addressed the rationale for using the CAPA© instead of the NRS. Most of the CAPA© assessment is included by nursing staff in

their daily interactions with their patients. To harness personal ability, nursing staff were given the tools for understanding CAPA© during the education sessions. Subject matter experts were also available on the unit to assist across all shifts. One on one and small group education was provided to nursing staff as needed to accommodate all nursing shifts and individual needs. To achieve social motivation, the use of the CAPA© was discussed daily at shift change by a combination of charge nurses, unit champions, the primary investigator (PI), and the unit Clinical Nurse Specialist (CNS). Additionally, patient education materials about CAPA© was provided to nursing staff for distribution to their patients. Social ability also used the unit champions who were well-known as the CAPA© subject matter experts on the unit, and often provided both initial education sessions and follow up education during adherence observations. They continued to work their regularly scheduled shifts, and were available for questions from their coworkers. The PI was also physically present and available for questions or concerns regarding CAPA© 3-4 days each week, which included some early morning and late-night shift assistance. On days not present on the unit, the PI was also available via phone or email for questions or concerns. Structural motivation techniques included frequent recognition of staff doing the right thing during huddle. Finally, structural ability included reminders for CAPA©. Each computer used for documentation, to include those at the nurse's station and in the patient rooms, had a calculation sheet for CAPA© posted on it. Staff documented a numeric score for pain as translated using CAPA© calculation sheet in the same location in the EHR as current practice, making the change to the habits the nursing staff have developed minimal. A graphic depiction of these sources of influence is in Figure 2.

Bandura's Self-Efficacy Theory.

The theory of self-efficacy was developed by Albert Bandura (1977). It suggests a person's ability to successfully complete a task stems from their confidence in performing that task. Evaluation of self-efficacy in the nurse as it relates to pain assessment and the use of the CAPA© tool provides valuable information. An RN who has a high level of self-efficacy in pain assessment is more likely to successfully evaluate a patient's pain (Jansen et al, 2018).

Self-efficacy provides the theoretical framework for multiple studies related to pain assessment. Chiang, Chen, and Huang (2006) found that a pain education program for pediatric pain assessment significantly increased perceived self-efficacy for the assessment of pediatric pain in student nurses. Chiang, et al. (2006) developed their six-question self-efficacy questionnaire with review for content validity by pediatric nurses. Jansen et al. (2018) also used a self-efficacy questionnaire to evaluate nursing self-efficacy in the assessment and management of pain in dementia patients at the end of life. As a result, a self-efficacy questionnaire was incorporated into this project for evaluation of the nurses' self-efficacy both before and after implementation of CAPA©.

Methods

Purpose

The purpose of this quality improvement project was to: 1) improve patient satisfaction related to pain and communication with nurses, and 2) evaluate nursing self-efficacy for pain assessment before and after implementation of CAPA©, and 3) determine adherence to CAPA©.

The setting in which CAPA© was implemented actively participates in the Press Ganey© patient satisfaction survey process, and includes queries regarding pain management and communication with nurses. The historical data from the selected unit show room for significant

improvement with an overall pain satisfaction score of 66% the year prior to project implementation. By addressing the way in which pain assessment is approached, there was potential for improvement in both of these domains of patient satisfaction. While there were changes to the way the pain management question is phrased at the beginning of the year, there remained opportunity for improvement.

Design

This project was designed as an evidence-based quality improvement project. It involved a quantitative evaluation of patient satisfaction using data from patient responses to standardized satisfaction surveys. The nurses' experience with application of CAPA© in practice was evaluated through completion of a survey examining nurse-self efficacy with pain assessment before and after the implementation instrument. The theory of self-efficacy was developed by Albert Bandura (1977). It suggests a person's ability to successfully complete a task stems from their confidence in performing that task. Content analysis was also conducted on comments from nursing staff provided during adherence observations.

Sample

The sample for this project included the patients and RNs on a 28-bed acute care medical-surgical unit at an Academic Health System in the southeastern United States. All RN staff members working in the practice setting during the project period were considered eligible for the self-efficacy survey. Any patient who was admitted to the setting during the project was eligible to participate in patient satisfaction surveys as distributed by the facility.

Setting

The setting was a 28-bed adult medical-surgical acute care unit with an average daily census of 27 and typically includes 8-10 patients that are post-operative and 8-10 newly admitted

with a medical diagnosis. The practice setting staff includes 45 RNs, 1 Clinical Nurse Specialist (CNS), 16 patient care assistants and techs (PCA/Ts), acute care nurse practitioners, as well as rotating teams of residents and attendings. Patients in this care setting are primarily admitted with a digestive health diagnosis. These patients may have either undergone surgery and/or have been diagnosed with a medical digestive diagnosis(es). Digestive health surgical patients can be admitted to this unit either pre-operatively or post-operatively. Post-operative patients are primarily treated using Enhanced Recovery After Surgery protocols. Pain management practices are standardized within the surgical patients and individualized pain management plans are incorporated into the medicine patients' plans of care. This plan may include the use of epidurals, Patient Controlled Analgesics, IV lidocaine, and both opioid and non-opioid analgesia as determined by an interprofessional team.

Protection of Human Subjects

Approval from the university institutional review board (IRB) was obtained prior to beginning this project, and the project was determined to be quality improvement; IRB HRS Tracking ID 20911. At no point were participants asked to place identifying information on surveys. Participation in this study was voluntary and data obtained from patient satisfaction surveys was not associated with identifying information. Nursing self-efficacy survey participants were asked to use the last 4 digits of their phone number for survey matching purposes only.

Procedures

After obtaining IRB approval, the PI alerted the nursing staff to the project and the electronic self-efficacy for pain assessment survey (Table 2). Staff were notified of survey

availability by the PI and by unit champions during huddle at shift changes and via email. The survey was distributed using a pre-established staff distribution email list by the PI.

Potential self-efficacy survey participants (RNs) received an email with the link to the survey at the beginning of a two-week data collection period, as well as a reminder email sent after survey data collection initiation. Additionally, communication was multimodal, accomplished through huddle notes discussed at shift change twice daily; two unit champions to assist with word of mouth on the unit; and email reminders to all unit staff eligible to participate in the survey.

The nursing staff that included RNs and PCAs/PCTs, were educated on the CAPA© after survey completion. Education was provided in person by the PI, as well as the unit champions and unit CNS. Preset class times were established for small group education. Additionally, one on one education was provided as needed to accommodate shift requirements and individual needs. The goal of the education was to reach 100% of RN and PCA/PCT staff.

The CAPA© data were documented using a numeric translation for the original questions. The CAPA© tool addresses comfort, change in pain, pain control, mobility, and sleep. Capitalizing on the expertise of an interprofessional pain management committee, the investigator collaborated using a rigorous process to translate patient responses to CAPA© domains into a numerical score. Responses to each of these domains corresponded with a number that was tallied and documented in the patient's EHR. A table of the numeric translations is Table 3.

Further reminders to the RN staff of utilizing the CAPA© were provided throughout the study period. This included CAPA© reminder placards placed on all unit computers for documentation assistance and CAPA© reminders discussed during huddle with every shift.

Patient education pamphlets were made available to nursing staff for distribution to their patients in order to promote patient participation in the use of CAPA©.

Adherence was monitored using direct observations during implementation of CAPA© (Figure 3). Each week direct observations were used to evaluate the current use of CAPA© by the unit champions, PI, and unit CNS. A goal of at least ten direct observations per week was established. After observations, discussion of the use of CAPA© was addressed with the nurse that included praise for appropriate use and reminders of when and how to use the CAPA©. Adherence was defined as the CAPA© being used and documented. Any variation of instrument use was considered incomplete adherence. Adherence data were collected for eight weeks following initial implementation of the project. After 4 weeks, it was clear there was a need for a better feedback mechanism for the nursing staff. Nurses were asked what they liked about the CAPA© with each encounter and where they saw room for improvement.

After a full month of CAPA© implementation, the self-efficacy survey was repeated and made available for RN staff members to complete. The same mechanisms were employed for the post-intervention survey as for the pre-intervention survey.

Patient satisfaction survey data was extracted at the end of the three-month period. The three-month timeframe coincides with the quarterly reports received from Press Ganey© data and allows for year to year comparison. Data was finalized for patient satisfaction surveys at 5 weeks after project completion. Data analysis was conducted using IBM SPSS Statistics® Version 25.0. Armonk, NY: IBM Corp. for both the patient satisfaction surveys and the self-efficacy questionnaires.

Measures

Patient satisfaction surveys are sent to patients after discharge from the hospital as standard hospital practice. These standardized surveys from Press Ganey© are used nationally and address quality of healthcare provided during the inpatient stay. Responses over the past year for the unit in which this project was conducted range from 13-26 surveys per month. All patients discharged from the designated unit with an email address in their electronic health record profile typically receive an electronic version of the survey. Of those who did not have an email address on file, 75% of the patients received a paper copy of the survey in the mail.

All returned surveys are reported in real time. Data from the surveys is compiled based on the month the survey was received or the month the patient was discharged. The results for this project were calculated using the date the patient was discharged. Satisfaction was measured by evaluating responses to one primary domain which encompasses three questions. The primary domain tracked was communication with nurses. The questions included: "during this hospital stay, how often did nurses treat you with courtesy and respect?;" "during this hospital stay, how often did nurses listen carefully to you?;" and "during this hospital stay, how often did nurses explain things in a way you understand?" (Centers for Medicare & Medicaid Services, 2017). Responses to patient satisfaction surveys were evaluated through comparison of the quarter prior to implementation and the quarter during implementation. Surveys returned by patients are kept anonymous and demographic data for patients who return surveys is not available for evaluation.

Previously, questions about pain were included in the satisfaction survey; however, these questions changed as of January 2018. The pain domain that was be tracked is communication

about pain. The question tracked was: “during this hospital stay, how often did hospital staff talk with you about how much pain you had?” (Centers for Medicare & Medicaid Services, 2017).

Jansen et al.’s (2018) self-efficacy questionnaire was adapted for inclusion in this project. Because this instrument was developed for the assessment of nurses caring for patients with dementia at the end of life, it was slightly modified to fit the population of this project (adult, acute care patients). For example, the statement “I feel confident recognizing and assessing pain in patients with advanced dementia nearing the end of life” (Jansen, et al., 2018), was modified to “I feel confident recognizing and assessing pain in my patients”. The survey was reduced to 9 questions from the original 13 with the removal of statements that do not pertain to the practice change. Content validity was verified by two CNSs and a Nurse Educator with extensive experience with the target population. The self-efficacy questionnaire for RNs is Table 2. Questionnaires were identified using the last 4 digits of the person’s phone number in order to maintain privacy and track changes in response over time. Each of these items were skipped if the participant felt uncomfortable providing this information.

Prior to implementation on the unit, the self-efficacy questionnaire was tested in a pain management class which included 25 RN participants who completed the pre- and post-class questionnaire. Reliability was established at this time with the Cronbach alpha of 0.875 (n=25) and 0.927 (n=24) for the pretest and posttest respectively.

In the study by Chiang et al. (2006), re-evaluation of self-efficacy was conducted one month after education implementation to establish if there was a change in self-efficacy after application of the education. Using this as a guide, self-efficacy on the designated unit was evaluated prior to the CAPA© education and at one month after implementation of the CAPA©

tool. The timeframe for data collection of patient satisfaction scores was extended for an additional three months in order to establish clear trends of comparison after implementation.

The facility consistently used direct observation for evaluation of current state as per LEAN® methodologies, therefore, the process was familiar to staff being observed and the unit champions who assisted with observations. Adherence data via direct observation was collected over the course of 8 weeks. Observations were conducted with a goal of at least ten times per week. In order to be considered "adherent," the questions of whether the CAPA© is used and documented in the chart must be answered "yes." If CAPA© was not used, a third question was used to evaluate if there were situations where CAPA© was appropriately avoided. Other data collected during the observation included date, shift, and name of observer (Figure 3).

Data Analysis

IBM SPSS Statistics® Version 25.0 (Armonk, NY) was used to evaluate the data gathered during this project. The Wilcoxon matched pairs test was used to evaluate for statistical significance for self-efficacy surveys. A statistical significance level was set at $p < 0.05$. Evaluation of patient satisfaction results included a comparison of percentages obtained from the Press Ganey© surveys as trended over time.

Results

CAPA© Education

Of the 45 RNs working on the unit, 100% received education on the use of the CAPA© over the course of 2 weeks. An additional 23 nursing students and 4 travel and resource RNs were educated on the use of CAPA©. Additionally, 16 PCAs/Ts were educated on how the CAPA© is used on the unit by the RNs, and their ability to contribute to pain management for patients admitted to the unit.

Patient Satisfaction

Patient satisfaction was measured using data collected by the facility via HCAHPS surveys. Two categories of responses were considered, Communication About Pain and Communication with Nurses. Data was collected during the quarter in which the project was implemented, providing three months of surveys after implementation of CAPA© on the unit (Tables 4 and 5). Demographic data for patient satisfaction surveys was not available for returned surveys.

The Communication about Pain survey responses include an overall satisfaction level and one individual questions. Because these questions changed at the beginning of the year, data collected during the implementation period is compared to the previous three months. Prior to CAPA© implementation, overall pain satisfaction scores for quarter 3, months 1, 2, and 3 were 80.4% (n=23), 83.8% (n=19), and 74.0% (n=25) respectively. After implementation, the overall pain satisfaction scores for quarter 4, months 1, 2, and 3 were 79.4% (n=17), 86.7% (n=15), and 75.0% (n=16) respectively. The mean number of surveys returned prior to implementation was 22 (*SD 2.*49) and for post implementation was 16 (*SD 0.*81).

Question 1: How often staff talk about pain. The pre-implementation scores were 78.5%, 84.2%, and 80.0%, compared to the post-implementation scores of 82.4%, 93.3%, and 81.3% respectively.

Survey responses for Communication with Nurses provided an overall satisfaction score and three individual questions. In the quarter prior to implementation, the number of surveys returned by month were 27, 29, and 28 (mean: 28; *SD 0.82*); the number of surveys returned by month during the final annual quarter was 21, 21, and 18 (mean: 20; *SD 1.41*). The overall scores for satisfaction with communication with nurses in quarter 3, months 1, 2, and 3 prior to

implementation was 87.7%, 87.4%, and 89.3% respectively. The overall satisfaction scores for quarter 4, months 1, 2, and 3 during CAPA implementation was 90.3%, 92.1%, and 66.7%.

Question 1: Nursing communication -Nurses provide information in a manner that the patient can understand. The scores for the quarter prior to implementation for the first question were 88.9%, 86.2%, and 82.1%, compared to implementation time frame scores of 90.0%, 90.5%, and 65.0% respectively.

Question 2: Nursing communication - Nurses listen carefully to you. The scores for the quarter prior to implementation were 85.2%, 86.2%, and 89.3%; the scores after implementation were 85.7%, 90.5%, and 55.0%.

Question 3: Nursing communication - Nurses treat you with courtesy and respect. The scores for this question during the quarter prior to implementation were 88.9%, 89.7%, and 96.4%. The scores during the implementation months were 95.2%, 95.2%, and 80.0%.

The quarter for which the project was implemented was compared to the prior quarter as an average for the quarter as a whole. The overall satisfaction score for nurse communication in quarter 3 was 88.1%. For quarter 4, the satisfaction score was 83.2%. The reported patient satisfaction for these two quarters for the question regarding nurse explanations being understood was 85.7% and 82.0% respectively. When asked if nurses listen carefully, the patient satisfaction scores for these two quarters were 86.9% and 77.4% respectively. The final satisfaction scores with nursing communication about courtesy and respect were 91.7% and 90.3% respectively.

Satisfaction with communication about pain had an overall score of 78.9% for quarter 3 and 79.6% for quarter 4. For these same quarters, the satisfaction scores about staff talking about pain were 80.6% and 85.7% respectively.

Nursing Self-Efficacy for Pain Assessment

For the nursing self-efficacy for pain assessment surveys, the pre-implementation survey received 30 responses (66% response rate) and the 30-day post-implementation survey received 31 responses (69% response rate). Of these responses, 10 participants provided a tracking number (last 4 digits of phone number was suggested) that were able to be linked in the pre- and post-surveys. Demographic data collected included years as an RN and years working on the unit. Each of these were recorded categorically: less than 1 year, 1-2 years, 3-5 years, 6-10 years, 11-15 years, and over 15 years (Table 6).

The maximum possible total score on the self-efficacy survey is 45 and the minimum is 9. On the pre-survey, the total survey score ranged from 9-45, with a mean score of 38.07 (*SD 7.86*). The post-survey scores ranged from 21-45 with a mean score of 38.61 (*SD 6.50*). The difference between the mean of the aggregate pre and post survey scores was 0.54.

The years on the unit were grouped into two levels: less than 5 years, and greater than 6 years. The pre-survey score for the 5 years or less group (n=18) ranged from 26 to 45 with a mean of 39.38 (*SD 6.34*), while the pre-survey scores for 6 years or more (n=8) ranged from 9 to 44 with a mean of 35.87 (*SD 11.93*). The group of participants with 5 years or less on the unit had a mean score that is 3.51 points higher than the group with 6 or more years on the unit. The post-survey scores for 5 years or less (n=19) ranged from 27 to 45 with a mean of 39.21 (*SD 5.76*), and the 6 years or more group (n=5) ranged from 21 to 44 with a mean of 38.20 (*SD 9.73*). The mean score on the post-survey for the group with 5 years or less on the unit was 1.01 points higher than the mean score for the group with 6 or more years on the unit. Table 7 displays this data.

Analysis was conducted on the 10 matched surveys. In these cases, the pre-survey ranged from 27-45 with a mean of 38.50 (*SD 6.31*), and the post-survey ranged from 32-45 with a mean of 41.20 (*SD 5.09*). The calculated difference between pre-survey total score and post-survey total score ranged from -5 to 14 with a mean of 2.70 (*SD 5.66*). The value for skewness for the total pre and post-survey scores were -0.739 and -1.109 respectively, making non-parametric testing appropriate for this dataset. A Wilcoxon signed rank test demonstrated no statistical difference between the pre and post-survey total scores (p=0.151), nor differences between individual item responses.

This data set was also divided into groups of participants who have been working on the unit for 5 years or less, and 6 years or more. The Mann-Whitney test was used to evaluate difference in scores based on groups. With this grouping, statistically significant increases in the total scores were observed in the group of participants on the unit for 6 years or more (p=0.047; Z = -1.99) (Table 8). The mean change in total score for participants with 5 years or less (n=7) on the unit was 0.14 (*SD 3.18*) with a range of -5 to 5. The mean change in total score for participants with 6 years or more (n=3) was 8.67 (*SD 6.11*) with a range of 2 to 14.

Adherence

A total of 82 observations were conducted over 8 weeks. Within these observations, 71% (n=58) were conducted during day shift, and 29% (n=24) during night shift. Observer 1 collected 57% (n=47) of observations, observer 2 collected 15% (n=12), observer 3 collected 17% (n=14), and observer 4 collected 11% (n=9). Observations were spread over varying shifts; handoff accounted for 24% (n=20), medication administration accounted for 37% (n=30), RN assessment accounted for 18% (n=15), and other times during the shift accounted for 21% (n=17) of observations (Table 9).

Overall adherence was 68%, which accounted for the times when CAPA© was used and documented. An adjusted adherence rate was calculated to account for instances when CAPA© was not appropriate for use for the specific patient; the overall adjusted adherence was 75%. Of the 82 observations, CAPA© was determined to be inappropriate for the patient 7 times or 9% of the time. These situations include patients who are unable or unwilling to participate in the use of CAPA© as a pain assessment tool (Figure 4).

It was noted during CAPA© adherence observations by the PI and unit champions that staff wanted a mechanism for providing feedback in real time during adherence observations. Four weeks into observations a comment box was added to the observation sheets that included questions about barriers to using CAPA© and what staff like about CAPA©. When asked about barriers to using CAPA©, 27 responses were collected and evaluated (Appendix B). These responses were categorized into 6 groups after consensus with 2 reviewers: too long, not available in EHR, personal dislike, patient misunderstanding, staff inconsistency, and other. One response from each category was selected as representative based on consensus of the reviewers.

Too long (7 responses). "Takes too long and is hard to remember."

Not available in EHR (8 responses). "Not in Epic."

Personal dislike (1 response). "I don't like it."

Patient misunderstanding (3 responses). "Patients give a number before you can even talk about comfort."

Staff inconsistency (3 responses). "Not everyone is using it."

Other (5 responses). "Does not work with confused patients."

When asked what staff liked about CAPA© 14 responses were obtained. These responses were categorized after consensus with 2 reviewers as follows: promotes RN practice,

conversational assessment, better assessment than NRS, better patient understanding, already part of established practice, and other. One response from each category was selected as representative based on consensus of 2 reviewers.

Promotes RN practice (2 responses). "Allows for more autonomous practice."

Conversational assessment (2 responses). "It is a conversation with the patient."

Better assessment than NRS (5 responses). "Really helpful for patients who struggle with the numeric rating scale."

Better patient understanding (3 responses). "It makes more sense to the patient."

Already part of established practice (1 response). "I already ask about all of the pieces in my assessment."

Other (1 response). "Nothing."

Discussion

The implementation of CAPA© yielded some interesting findings that are not in line with previously published literature. Overall, patient satisfaction decreased after implementation of CAPA© and statistically significant changes to nursing self-efficacy were only noted in nurses with over 5 years of experience. These findings provide new perspective within the CAPA© literature.

CAPA© Education

For this evidence-based practice project, education of the nursing staff was crucial to the success of the intervention. As previously discussed, utilizing the NRS to evaluate pain status is an entrenched practice in the healthcare setting. It is difficult to change such an embedded practice, particularly when only a portion of the staff receive the education. The goal set at the beginning of the project was to teach CAPA to 100% of the RN staff and as many of the PCA/T

staff members as possible. This goal was achieved within two weeks of beginning education on CAPA©.

There were multiple contributing factors to the success of the education program. First, the class was developed to take less than 30 minutes, 20 minutes of content and 10 minutes for questions. This rather brief timeframe allowed more flexibility of when nurses were able to complete the education, and limited time spent by staff members away from a shift. The unit champions in this project played a huge role in achieving the 100% education rate. They provided education to fellow staff members during down time in shifts, and were available during regularly scheduled shifts for follow up questions from staff, providing real time assistance to reinforce learnings from the class.

Second, the classes were staggered between shifts, varied times were offered for larger groups, and the education sessions were held on the unit, limiting the amount of travel time between patient care and class. Classes were also scheduled to be held during staff and shared governance meetings, allowing those in attendance to complete the education either during the meeting, or immediately afterwards.

Finally, for those nurses who were unable to attend a scheduled time, the education was brought to the staff member. The PI, unit CNS, and unit champions were available to provide education at various times throughout the two weeks. Coordination between the staff member and person educating established times during the shift when the staff member would be able to complete the education. This individualized education provided the opportunity to reach small groups of staff and also afforded much more time for questions and concerns. Not only was this personal education beneficial for those who participated, being actually on the unit allowed for hands on demonstration immediately after the didactic portion. All parties providing education

were adept at using CAPA© during any patient interaction and welcomed the opportunity to work with other staff members on this instrument.

However, replication of this model would be difficult if the availability of unit champions and a dedicated PI is limited. Providing one to one education is time consuming. It is feasible that 6 hours of availability of an educator will only reach minimal staff members, making the time spent inefficient as a model for providing education. Limited staffing will reduce the ability to have a person dedicated to educating 45 staff members individually, limiting the feasibility of replicating this model in many settings.

Patient Satisfaction

Evaluating trends in patient satisfaction data provided insights into the potential influence of CAPA© on patient satisfaction with pain management. When looked at as a monthly trend, there were overall increases for the first two months of implementation consistent with the increases seen in the previous months, followed by a significant drop in scores for the final month of data collection. The trended increases make it unlikely that CAPA© had an impact on patient satisfaction scores as a whole.

During the final month of data collection, observations for adherence ceased, making it possible that staff felt they no longer needed to use CAPA© as their pain assessment. This month was also quite tumultuous from a staffing perspective. This month was also quite tumultuous from a staffing perspective with traveling staff turnover, and many staff callouts due to illness. Each of the confounding factors may have impacted the overall ratings received from patients returning surveys, and likely contributed to the decrease in all patient satisfaction scores.

The slight uptick (0.7%) in scores for overall pain satisfaction between the two quarters did not point to CAPA© as the solution to low pain communication satisfaction scores previously

noted on the unit. The aspects of CAPA© are frequently seen when nurses discuss pain with their patients. The minimal change in actual practice could account for this lack of demonstrated improvement. However, the quarterly data for the questions about frequency of staff talking about pain did see a 4.9% increase. So, while the aspects of CAPA© may be observed often in practice, the highlighting of pain assessment during these months may have spurred more discussion between nurses and patients.

The patient satisfaction scores regarding Communication with Nurses followed a similar pattern as the Communication about Pain with a continuation of the previous mild uptrend followed by a significant drop in the final month. However, unlike patient satisfaction with Communication about Pain, Communication with Nurses saw a drop in overall satisfaction from 88.1% to 83.2% for the quarter as a whole. This decrease is likely attributed to the low scores for the final month. With these results, it is apparent that improvements in patient satisfaction were not replicated on this unit.

The overall decrease in patient satisfaction scores contradicts previous findings by Topham & Drew (2017); however, their evaluation of patient satisfaction spanned 15 months, in contrast to the 3 months for this project. They noted a general upward trend, but state that their patient satisfaction scores were variable. It is possible that, if continued in the practice setting for a longer period of time, a variable but upward trend in patient satisfaction scores would also be seen.

Nursing Self-Efficacy

The overall response rate for both the pre- and post-surveys was high (66% and 69% respectively), providing a solid foundation for evaluating the group as a whole. However, the data is limited in that only 10 of these responses are able to be paired as pre- and post-surveys

attributed to the same participant, limiting the conclusions that can be drawn on an individual level. In analyzing the paired data, no statistical difference was found between total scores. Yet when grouped based on years on the unit to 5 years or less and 6 years or more, there is a statistically significant increase in scores of the group that has been on the unit 6 years or more. This increase may mean that nurses who are more established in their practice will see the CAPA© as a means to feel empowered to take a more active role in pain management for their patients. Conversely, newer staff members may not reap the same benefits as those with longevity on the unit. With this in mind, use of the CAPA© as a tool in places with frequent staff turnover may be more detrimental than beneficial from the perspective of the nurse.

This outcome led to further investigation into the pre- and post-survey scores for the group. When looking at the mean scores, the participants being on the unit 5 years or less, consistently scored themselves higher than those who had been on the unit longer. There was also a narrower range and smaller standard deviation associated with being on the unit for less than 5 years, indicating more consistency in the responses of those in that group. The wider range and higher standard deviation for those who have been on the unit longer indicates more varied responses. This may be related to more established practice understanding and could suggest a harsher self-critique. The lack of statistical significance related to nursing self-efficacy suggests there is more work to be done when it comes to improving pain assessment, and CAPA© may not be the instrument to move pain assessment practice forward. The results of the self-efficacy surveys may have been completed too soon at one month after implementation. A longer time period before re-evaluation of self-efficacy may be appropriate in the future to allow the change in practice to be solidified.

Self-efficacy has not been measured in relation to CAPA© previously. However, Topham & Drew (2017) did evaluate nursing satisfaction with CAPA© and found that "80% (of nurse respondents) felt communication with patients improved with CAPA and 66% preferred CAPA over NRS. This is comparable to the Utah's finding that nurses preferred the CAPA tool 3 to 1 over NRS" (p. 368).

Adherence

Adherence data was collected over the course of 8 weeks. During that time, 68% of observations included CAPA being used for the pain assessment. When accounting for instances where CAPA was not appropriate for use, such has a patient being unable or unwilling to participate, the overall adherence rate went up to 75%. In a study by Jablonski & Ersek (2009), adherence to evidence-based guidelines for pain assessment in a nursing home ranged from 20% to 40%. This study looked at an established practice rather than a change in practice, however, it would be expected that an established practice would have higher adherence than a new practice. During the implementation of CAPA© by Topham & Drew (2017), the initial adherence rate for CAPA© during the first quarter of implementation use was 80%, higher than the overall adherence rate for this project.

While not equivalent to the adherence scores of previous studies (Topham & Drew, 2017), the adherence rate of nurses in the practice setting was well above what would be considered "normal" for other evidence-based practice projects. Some of the contributing factors to the high adherence rate include a nursing staff that is experienced in trialing new practices. The practice setting is frequently used as a pilot unit within the hospital, and the staff enjoy being involved in evidence-based practice change. By using the Influencer model (Grenny et al., 2013), multiple aspects of making CAPA© easy to use were addressed. Some of these helpful

components included availability of unit champions, the unit CNS, and the PI to assist, clearly visible information sheets on each computer and badge buddies that were given to each RN, and consistent recognition of good CAPA© adherence by RN staff. The education of the PCA/T staff also played a role in promoting the use of CAPA© on the unit. This allowed all members of the staff to be part of the practice change and to hold each other accountable.

Furthermore, the practice of using CAPA© as the primary pain assessment for patients was not a far stretch for most experienced nurses on the unit. Many of the talking points for the assessment are asked on a regular basis by RNs, making the transition to CAPA© less difficult than it would be to use an instrument which included aspects not often discussed in the nurse-patient relationship. This ease of transition made nurses more likely to use CAPA©, instead of reverting back to prior methods.

The method of collecting adherence data also may have contributed to the high overall adherence rate. There is a possibility that some of the positive adherence instances could be attributed to the Hawthorne effect, rather than consistent use of CAPA©. Without a way to track adherence to the CAPA© process through documentation, it is difficult to know the true use of CAPA© on the unit. Based on the feedback received from staff and the inability to track adherence via documentation, future practice changes should include a plan for EHR support.

Project Strengths

The inclusion of all staff and patients on one designated unit has the advantage of consistency. This study was not limited to a specific population within the unit, making application easier for staff. Incorporating an adult medical-surgical unit that cares for a wide variety of patients also made this design more relevant to other inpatient populations.

Additionally, the CAPA© instrument includes aspects of care that are typically discussed in conversation with patients, making the transition to CAPA© easier.

With the evaluation methods, the use of standardized Press-Ganey© surveys ensured there was no influence on the scoring mechanism for patient satisfaction and provides strong historical data to compare changes during implementation. The use of Qualtrics® as a survey instrument was also beneficial in this study. The responses were kept anonymous, and were logged by the participant, making transcription errors with data entry non-existent. Finally, the self-efficacy survey instrument was communicated through multiple modes to include email, and in person reminders from the PI, unit CNS, and the unit champions. This multimodal approach to communication likely contributed to the high survey participation rate.

The education on the use of the CAPA© tool was provided to the entire staff by the PI as well as by the unit champions and the unit CNS. Information was available in one on one conversations, group presentations, and written materials on the unit.

Project Limitations

While the CAPA© instrument has been implemented in similar settings, it has not been tested for validity. Furthermore, there are limited publications on its use, suggesting the feasibility of CAPA© may be imperfect, or implementation may be difficult. Based on the above discussed results, the feasibility of changing practice to CAPA© was indeed difficult. The short timeframe and lack of EHR support in this project are the likely culprits impacting the generally negative results.

The self-efficacy survey used was modified to meet the needs of the patient population, reducing the instrument's validity and reliability. However, the instrument was reviewed by colleagues adept at using and reviewing self-efficacy assessments, increasing the overall face

validity of the instrument. These reviewers include two Acute Care CNSs and a Nurse Educator. The survey was also trialed prior to implementation to establish further face validity.

The response rate for the self-efficacy surveys was high (66% and 69% for pre- and post-survey respectively). However, evaluation of the results was limited in that only 10 of these surveys could be matched for pre- and post-surveys, making trends difficult to establish. The one-month interval between pre- and post-survey also posed limitations. This timeframe may have been too short for the practice change to have been established into practice enough to see impacts to self-efficacy.

Conclusion

Future Implications

The results of this evidence-based practice project do not suggest that CAPA© is the optimal pain assessment instrument for use in this particular unit. Pain is a highly complex and deeply individual, making assessment of pain difficult to measure. This project established that there is more to be done in the development and implementation of a pain assessment that captures the complexities of pain. Further investigations should focus on a pain assessment method that meets the needs of the patient as well as the nurse, while encompassing as many aspects of pain as possible in a simple, yet reliable tool.

As previously stated, the ASPMN has taken the position that opioid prescribing practices should not be linked solely to a pain intensity (Pasero, et al., 2016). With this in mind, CAPA© integrates a holistic approach to pain assessment and takes into consideration other relevant factors in a patient's pain. Despite the findings in this project, many aspects of CAPA© are valuable to nursing practice when evaluating the impact of a patient's pain on the patient as a whole.

While there is still more exploration needed, CAPA© presents a step in the right direction of addressing pain as more than a number, but rather a multi-dimensional and ever-changing factor to be considered with each patient and every healthcare interaction. Through continued pain assessment development and evaluation, adequate pain assessment and subsequent management may be possible.

Products of the Scholarly Practice

A manuscript for this project was written and submitted through LIBRA. The manuscript was also submitted to the Pain Management Nursing journal for publication. The project was presented in a podium presentation at the university's Evidence-Based Practice day. An abstract will also be submitted to the National Association of Clinical Nurse Specialists for presentation and their annual conference.

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Tables

Table 1

Study Table for Articles Included in Literature Review

Ref (author, year) and overall design	Subjects & Setting/ Period of Data collection	Outcomes based on stated aims	Limitations
Topham, D; Drew, D (2017) Quality improvement project	All adult patients at UMMC. Implementation of CAPA© instead of NRS Data collection from Dec2013-Mar 2015.	Improve patient satisfaction with pain on Press Ganey© evaluation Scores trended upward but no statistical sig given Additional results: -80% of nurses felt improved communication with patients. -66% of nurses prefer CAPA© to NRS	No numeric association to pain score. Limited statistical evaluation Patient stories suggest perceived improved caring about pain, but no formal evaluations done
Donaldson, G; Chapman, C.R. (2013) Quality Improvement Project	University of Utah Hospital Adult inpatient surgery, medicine, cancer and orthopedic services	Goal to improve patient satisfaction with pain management and improve nurse communication Established Clinically Aligned Pain Assessment (CAPA©).	No data actually given in article; stated analysis revealed staff and patients strongly preferred CAPA©
Chooi, C.S.L; White, A.M.; Ta, S.G.M; Dowling, K.; Cyna, A.M. (2013) Randomized Controlled Trial	300 post caesarean section patients at a tertiary referral center for maternity care in South Australia Nov 2010-Sep 2011 Randomized into two groups: Standard pain assessment and comfort assessment	Patients in pain group had statistically higher pain scores than those in comfort group, also required more pain medications and attributed their pain to tissue damage instead of healing and recovery The word pain is attributed to increased focus on pain. The word comfort is attributed to increased focus on healing	Inverse transformation of comfort scale to pain scale Comfort is not the opposite of pain. Only researchers used the “comfort” questioning for the test group. Other staff continued with their standard assessment
Chapman, C.R.; Donaldson, G.W.; Davis, J.J.; Bradshaw, D.H.; (2011)	711 elective surgery patients at University of Utah Health System Evaluation of post-operative pain scores	Women had higher initial pain score but had faster resolution Older patients had lower initial pain scores with slower resolution	Non-homogenous sample; Need for RCT to evaluate pain trajectory measurement

Observational Cohort study	during hospitalization and for 6 days after discharge Evaluation of pain trajectory	Chest surgeries had the highest initial score with fastest resolution; hip surgery had lowest initial score and slowest resolution Acute pain is self-limiting and measurement needs to gauge rate of resolution	
Jabusch, K.M.; Lewthwaite, B.J.; Mandzuk, L.L; Schnell-Hoehn, K.N.; Wheeler, B.J. (2015) Descriptive cross-sectional study	530 bed tertiary care hospital in western Canada; one day study Convenience sample of 88 adult inpatients Collect short form brief pain inventory	Most patients (84%) stated staff did everything they could for pt's pain Moderate to severe pain is present in 70.4% of patients	No evaluation of documented pain scores or interventions Conducted on a single day; no longitudinal data of pain experience over time.
Krebs, E.E.; Lorenz, K.A.; Bair, M.J.; Damush, T.M.; Wu, J.; Sutherland, J.M.; Asch, S.M.; Kroenke, K. (2009) Comparative cohort study	500 chronic pain patients and 646 veterans recruited from ambulatory care Each participant received the BPI and PEG (Pain intensity, enjoyment of life, and general activity) scales. Comparison for validity	Aim: develop an ultra-brief pain measure derived from the BPI Validity for PEG as compared to BPI gave an alpha of 0.73. PED demonstrated sensitivity to change in baseline in both groups.	Only tested as valid for outpatient population
Lehmann, N.; Joshi, G.P.; Dirkman, D.; Weiss, M.; Gulur, P.; Peters, J.; Eikermann, M. (2010) Randomized controlled trial	4 RCT phases to develop and validate OBAS (overall benefit of analgesic score) 1460 participants over 4 trials.	OBAS is valid for use in postoperative patients to include abdominal, orthopedic, gynecological and obstetric surgeries	Exclusion of sweating and shivering decreased predictive value of OBAS to patient needing opioids Only applicable to postoperative patients

Table 2

Self-Efficacy Questionnaire for RNs

Self-Efficacy Evaluation Statement	Rating Scale
I feel confident recognizing and assessing pain in my patients.	Each statement will have a 5-point Likert scale in increments ranging Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree
I feel confident reporting pain in my patients.	
I feel confident assessing treatment response to analgesics in my patients.	
I feel confident recognizing and managing breakthrough pain in my patients.	
I feel confident discussing cases of unresolved pain following administration of analgesia with providers.	
I feel confident in my clinical knowledge of pain assessment and management in my patients.	
I feel confident in my clinical self-efficacy in the assessment and management of pain in my patients.	
I feel confident I am using best practice approaches to pain assessment in my patients.	
I feel confident I am using best practice approaches to pain management in my patients.	

Table 3

CAPA© Numeric Translation for EHR Documentation

Question	Response	Number Associated
Comfort	Intolerable	3
	Tolerable with discomfort	2
	Comfortably Manageable	1
	Negligible Pain	0
Change in Pain	Getting worse	1
	About the same	0
	Getting better	-1
Pain Control	Inadequate pain control	2
	Partially effective	1
	Fully Effective	0
Functioning	Unable to do anything from pain	2
	Pain keeps me from doing most things I would like to do	1
	Can do most things but pain gets in the way of some	0
	Can do everything I need to	-1
Sleep	Awake with pain most of the night	2
	Awake with occasional pain	1
	Normal sleep	0

Table 4

Patient Satisfaction Data for Pain Questions

	Quarter 3 (Pre-Implementation)			Quarter 4 (Post-Implementation)		
	Month 1 (n=23)	Month 2 (n=19)	Month 3 (n=25)	Month 1 (n=17)	Month 2 (n=15)	Month 3 (n=16)
Overall Pain Satisfaction	80.4%	83.8%	74.0%	79.4%	86.7%	75.0%
How Often Staff Talk About Pain	78.5%	84.2%	80.0%	82.4%	93.3%	81.3%

Table 5

Patient Satisfaction Data for Nursing Communication Questions

	Quarter 3 (Pre-Implementation)			Quarter 4 (Post-Implementation)		
	Month 1 (n=27)	Month 2 (n=29)	Month 3 (n=28)	Month 1 (n=21)	Month 2 (n=21)	Month 3 (n=18)
Overall nurse communication satisfaction	87.7%	87.4%	89.3%	90.3%	92.1%	66.7%
Nurses provide explanation in a way you understand	88.9%	86.2%	82.1%	90.0%	90.5%	65.0%
Nurses listen carefully to you	85.2%	86.2%	89.3%	85.7%	90.5%	55.0%
Nurses treat you with courtesy and respect	88.9%	89.7%	96.4%	95.2%	95.2%	80.0%

Table 6

Demographic Data for Nursing Self-Efficacy Pre- and Post-Surveys

	Pre-Survey (n = 30)		Post-Survey (n = 31)	
	n	%	*n*	%
Years as an RN				
Less than 1	0	0.0%	1	3.2%
1-2	3	10.0%	3	9.7%
3-5	11	36.7%	11	35.5%
6-10	2	6.7%	3	9.7%
11-15	3	10.0%	1	3.2%
Over 15	7	23.3%	5	16.1%
Missing	4	13.3%	7	22.6%
Years on Unit				
Less than 1	6	20.0%	5	16.1%
1-2	4	13.3%	4	12.9%
3-5	8	26.7%	10	32.3%
6-10	4	13.3%	4	12.9%
11-15	2	6.7%	1	3.2%
Over 15	2	6.7%	0	0.0%
Missing	4	13.3%	7	22.6%

Table 7

Pre- and Post-Survey Scores Grouped in Years on Unit

	Pre-Survey				Post-Survey			
Variable	n	*M*	SD	Range	n	*M*	*SD*	Range
5 years or less working on the unit	18	39.38	6.34	26-45	19	39.21	*5.76*	27-45
6 years or more working on the unit	8	35.87	11.93	9-44	5	38.20	*9.73*	21-44

Table 8

Changes in Pre- and Post-Survey Scores in Matched Pairs
(Mann Whitney U – p = 0.047, Z = -1.99)

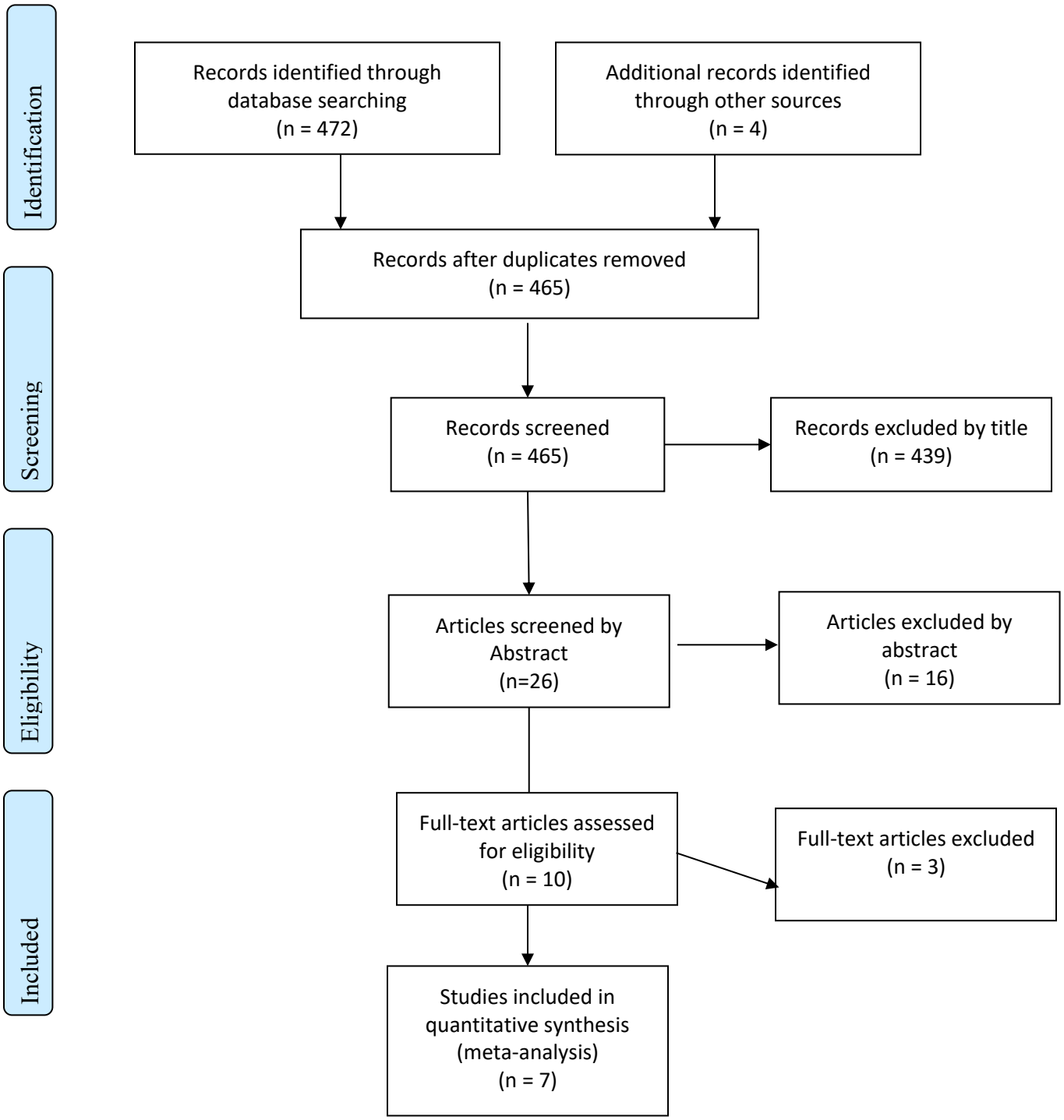
Variable	n	*M*	SD	Range
5 years or less working on the unit	7	0.14	3.18	-5 - 5
6 years or more working on the unit	3	8.67	6.11	2-14

Table 9

Demographic Data for CAPA© Adherence Observations

	Observations (N=82)	
	n	%
Shift		
Day	58	71%
Night	24	29%
Observer		
1	47	57%
2	12	15%
3	14	17%
4	9	11%
Observation time		
Handoff	20	24%
Medication Administration	30	37%
RN Assessment	15	18%
Other	17	21%

Figure 1: PRISMA Flow Diagram for Literature Review Article Selection



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Figure 2: Implementation Strategy Using Influencer Principles

	Motivation	Ability
Personal	• Benefits of CAPA© for patients • It is already part of the conversation nursing staff has with patients	• Group classroom education • Individual training as needed to fit individual needs • Direct observation reminder of when and how to use CAPA©
Social	• Shift huddle reminders • Recognition of nurses embracing CAPA© in practice • Direct observation praise • Patient education flyers	• Unit champions available to assist • PI present on the unit
Structural	• Frequent staff recognition • Direct observation of CAPA© adherence	• CAPA© reminders on every computer • Consistent location for documentation

Figure 3: Direct Observation Flow Chart

Observer_____

Date_____ Day Shift Night Shift

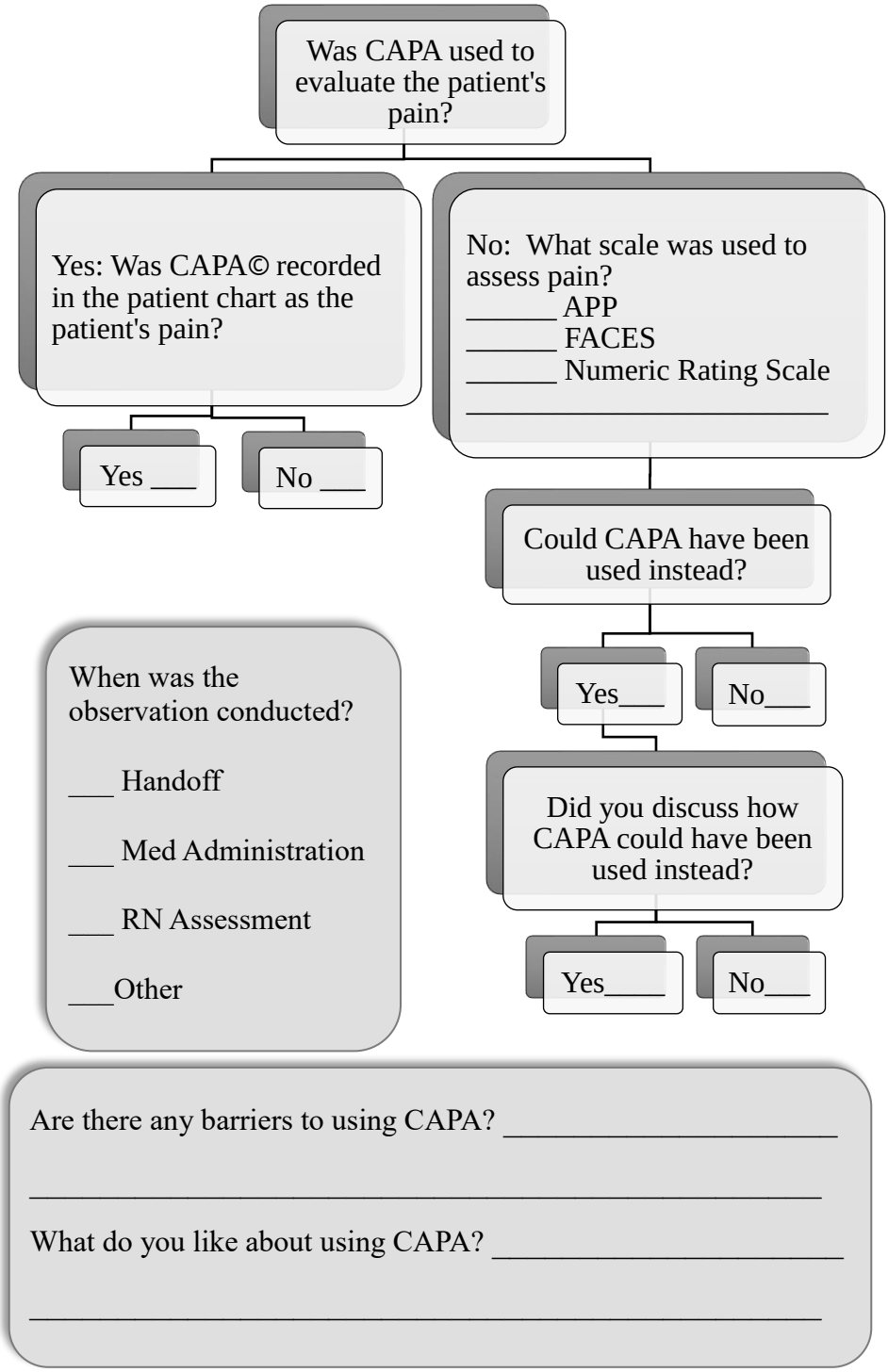
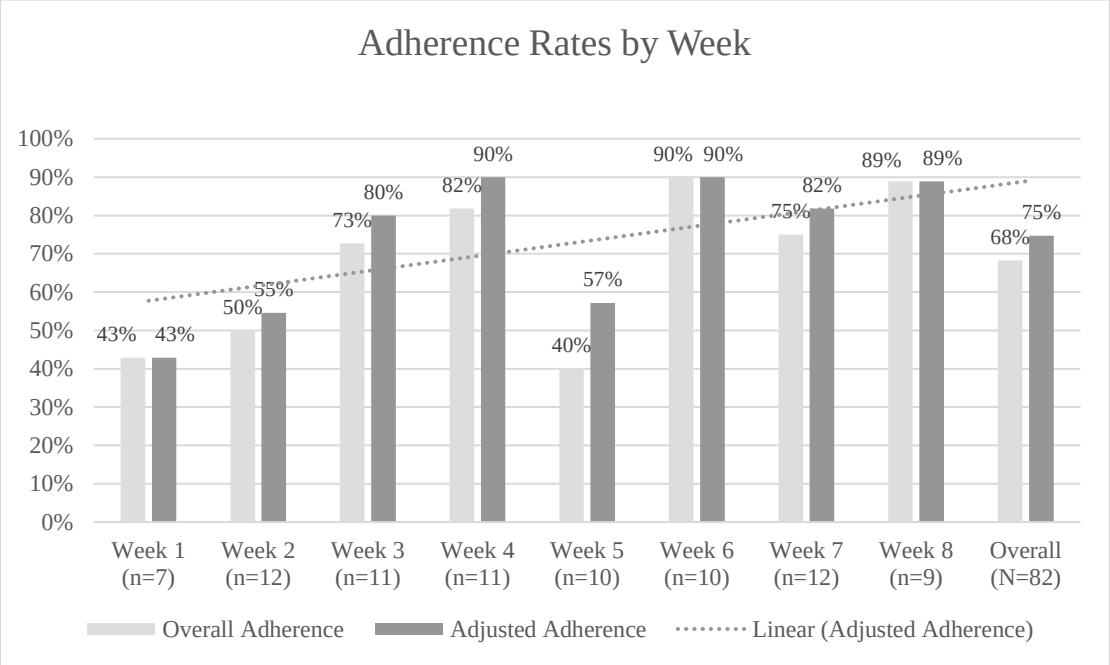


Figure 4: Rate of CAPA© Adherence by Week After Implementation



Appendix A – Definition of Terms

Self-Efficacy – one's confidence in their ability to perform a given task. (Bandura, 1977)

CAPA© – Clinically Aligned Pain Assessment ©; "a multifaceted pain assessment tool…[used] to replace the numeric scale for adult patients who could self-report their pain experience" (Topham & Drew, 2017, p. 363).

Press Ganey© – An organization whose "mission has been to support health care providers in understanding and improving the entire patient experience" (Press Ganey, 2018)

Nursing assistant staff – Includes all patient care assistants (PCA) and patient care technicians (PCT) on the unit.

HCAHPS© – Hospital Consumer Assessment of Healthcare Providers and Systems©; a "nationally standardized, publicly reported survey of patients' perspectives of hospital care" (Centers for Medicare & Medicaid Services, 2017).

Qualtrics® – a data gathering application used to compile survey responses (Qualtrics®, 2018).

RN Staff – Includes all registered nurses working on the unit.

Appendix B – Qualitative Data

Responses to barriers to using CAPA©

Too long (7 responses):

"Too long."

"Takes longer to do."

"Takes too long."

"Takes too long."

"Getting all of the pieces of the conversation feels clunky."

"Too busy."

"Time."

Not in the EHR (8 responses):

"Epic not having a # calculator"

"Not in Epic."

"Not in Epic."

"Not in Epic."

"Hard to remember."

"Not in Epic."

"Hard to remember the numeric translation."

"Not in Epic."

Personal dislike (1 response):

"I don't like it"

Patient misunderstanding (3 responses):

"Patients give a number before you can even talk about comfort."

"Patients will still give a number."

"Patient refused to answer questions, would only give a number."

Staff inconsistency (3 responses):

"Float RN not familiar with CAPA©."

"SRO staff not familiar."

"Not everyone is using it."

Other (5 responses):

"Fresh post-op patient from PACU with increased amount of pain."

"Does not work with confused patients."

"Patient is in too much pain to ask questions."

"Fresh post-op in visible pain."

"Patient with delirium and comfort measures only."

What is good about CAPA© responses:

Promotes RN practice (2 responses):

"Allows for more autonomous practice."

"Comfort is RN focused."

Conversational assessment (2 responses):

"It is a conversation with the patient."

"Personable."

Better assessment than NRS (5 responses):

"Translates well from the NRS."

"It makes more sense."

"Really helpful for patients who struggle with the NRS."

"It makes more sense."

"Translates close to the NRS."

Better patient understanding (3 responses):

"More personal."

"Makes more sense to the patient."

"Patients understand questions better."

Was already in established practice (1 response):

"I already ask about all of the pieces in my assessment."

Other (1 response):

"Nothing."