

IMPLEMENTATION OF A REFERRAL CRITERIA FOR ACUTE PAIN SERVICE ON A
POST-SURGICAL INPATIENT UNIT

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A DNP Project Manuscript
Submitted in Partial Fulfillment of the Requirements for the
Doctor of Nursing Practice Degree

University of Maryland School of Nursing
May 2019

Abstract

Title

Implementation of a Referral Criteria for Acute Pain Service on a Post-Surgical Inpatient Unit

Background

One in every four Americans experience pain for greater than 24 hours. Pain is a major reason Americans access the health care system. Uncontrolled pain can lead to longer hospital stays, increased rate of readmissions, and increased risk of arising complications. Acute Pain Service (APS) is a team that can manage patient's pain during the hospital stay. APS is found to decrease length of hospital stay and improve pain management in patients. A referral criteria instrument is a tool that guides nurses in assessing patients that meet criteria for APS. This referral criteria instrument can assist in increasing the number of APS consults.

Local Problem

Low APS consults were observed to be a practice problem in a post-surgical unit of a community hospital. In addition, the unit was observed to have uncontrolled pain as indicated by low patient satisfaction scores collected from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. The hospital has an approved referral criteria instrument that nurses could access to determine if patients meet criteria for a referral to Acute Pain Service (APS). However, nurses were resistant to the APS team due to the misperception of pain medication administration and nurses believing that utilizing APS for pain management led to opioid addiction.

Interventions

This quality improvement project took place over a 14-week period. During weeks 1-2, training on referral criteria via informal meetings was given to the clinical site representative, unit manager, pilot team (i.e. nurses on the unit), and pain champions on the unit. Printed copies of the referral criteria instrument were posted in the nurses' station, nurses' break room and walls of the bathroom. Implementation of the project occurred during weeks 3-10. The pilot team was reminded to utilize the referral criteria instrument daily. Patients that met criteria for APS were discussed during daily interdisciplinary rounds. Weeks 11-14 consisted of data collection and analysis for the project.

Results

The post implementation of the referral criteria instrument revealed an increase in the percentage of patients consulted to APS. Post-implementation results showed that 53.7 % of patients were consulted to APS, compared to pre-implementation results of 25.3% of patients consulted to APS. Findings revealed that the difference was statistically significant using the Chi-Squared test, $p = 0.002$ ($p < 0.05$).

Conclusion

The implementation of the referral criteria for APS was beneficial to the unit based on the increase of APS consults. The percentage of consults to APS post implementation was 53.7 %. This was a 28.4% increase of APS consults on the unit. Training on the referral criteria instrument and understanding the purpose of APS gave positive outcomes for the unit by increasing APS consults on patient that met criteria for APS. In addition, the increase in APS consults should furthermore lead to increased patient satisfaction and increased HCAHPS scores.

Implementation of a Referral Criteria for Acute Pain Service on a Post-Surgical Inpatient Unit

Pain is the leading cause of disability; an average of one in every four Americans experience pain for longer than 24 hours (National Institutes of Health, 2013). In fact, the main reason the health care system is accessed by Americans is due to pain (National Institutes of Health, 2013). In 2010, researchers revealed that 25% to 33% percent of patients in medical surgical units experienced moderate to severe pain (Miclescu, Butler, & Karlsten, 2017). Good & Dunn (2015) found that uncontrolled pain led to poor outcomes and negatively affected a person's life, as it was associated with depression, feelings of isolation, mobility impairment, sleep disruption, and anxiety. In acute care institutions, uncontrolled pain can lead to longer hospital stays, increased rate of readmissions, and increased risk of additional complications (Good & Dunn, 2015).

A post-surgical unit in a community hospital presented their concerns of uncontrolled pain as indicated by low patient satisfaction scores collected from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. HCAHPS is a survey instrument that measures the patients' perspectives of hospital care and their hospital experience (Centers for Medicare and Medicaid Services, 2017). In addition to the reviewed HCAHPS scores, the clinical site representative at the community hospital performed an audit through the electronic medical record which revealed a low percentage of APS consults (25.3%) for patients that met criteria for APS. The APS team was established in 2015 to manage patients' pain during the hospital stay. The hospital had an approved referral criteria instrument that nurses could have accessed to determine if patients met criteria for a referral to APS (See Appendix B). Upon discussion with the clinical site representative, it was revealed that nurses from the post-surgical unit were not utilizing the hospital referral criteria instrument due to the misperception about

pain medication administration. Nurses on the unit believed that utilizing APS for pain management led to opioid addiction. Uncontrolled pain was an issue for this unit, and an intervention was needed to better manage patients' pain (CRNP for APS, personal communication, February 7, 2018).

The purpose of this Doctor of Nursing Practice (DNP) project was to improve the management of uncontrolled pain at a community inpatient hospital by increasing the assessment of patient's pain using the referral criteria for an APS consult. Another goal was to improve patient satisfaction scores based on HCAHPS survey results. The practice change implemented utilized the hospital's standardized pain referral criteria instrument on all patients in order to determine if they met the criteria for an APS consult.

This DNP project consisted of short-term and long-term goals. The first short term goal was for 80% of day and night shift staff nurses to participate in the education of the referral criteria instrument. The second short term goal was for 80% of patients meeting criteria for APS to be consulted to APS. This was measured by multiple factors: looking at the patient's individual case, reviewing if or when APS was consulted, reviewing when intravenous pain medications were ordered, reviewing the increased trend of pain medications and if the pain was uncontrolled during the hospital stay. If the patient met criteria for APS, the nurse informed the doctor that a specific patient was recommended for an APS consult based on the identified reasons found on the referral criteria tool. The short-term goals were set to be achieved within the first two months after implementation. There were two long-term goals for this DNP project. The first long term goal was to increase patient satisfaction scores in the HCAHPS survey by 80%. The second long-term goal was to integrate the hospital's referral criteria instrument into the electronic medical record. The deadline for the long-term goals was four to six months.

Theoretical Framework

The integration of best evidence from well-designed studies is an approach called evidence-based practice (EBP) (Brown, 2014). Implementing EBP in an institution is found to improve the quality of care in patient outcomes and control the patient's healthcare costs (Brown, 2014). The Iowa Model of EBP is a framework that was widely used for the implementation of EBP (Titler et al, 2001; Brown, 2014). The Iowa Model originated from a team of nurses from University of Iowa Hospitals and Clinics and is based on Roger's theory (1983), a theory that emphasizes basic good in all people (Brown, 2014). This model was created to guide clinicians with evaluating research findings into patient care (Buckwalter et al., 2017). Clinicians, educators, administrators, and researchers all over the country use the Iowa Model (Titler et al, 2001; Brown, 2014); it has become a pragmatic guide for the EBP process.

The Iowa Model provides a framework to operationalize this quality improvement DNP project. The steps and decision points within the model helped facilitate the engagement of a nurse practitioner into the process of problem identification to solution development while incorporating evidence findings into the clinical practice. Buckwalter et al. (2017), identified the 10 steps of the Iowa model. The first step in the Iowa model was identifying the triggering clinical issue (Titler et al, 2001; Buckwalter et al., 2017). The issue identified in the post-surgical unit of an acute care hospital was uncontrolled pain. This was determined to be an issue based on reviewed HCAHPS scores and patient audits for the post-surgical unit regarding pain management. The second step was to state the question or purpose (Buckwalter et al., 2017). The purpose of this project was to implement a pain referral criteria tool that determined if a patient met criteria for APS for the purpose of adequately controlling pain during the hospital stay. The third step was the decision point that determined if this topic was a priority (Buckwalter et al.,

2017). Uncontrolled pain data and patient dissatisfaction scores through reviewed HCAHPS score and audits determined that this topic was a priority. The fourth step involved forming a team to develop intervention (Buckwalter et al., 2017). The team consisted of a DNP student, clinical site representative, the nurse manager for the unit, the APS team, unit pain champions, and day and night shift nurses from the unit. The fifth step assembled, appraised, and synthesized the body of evidence (Buckwalter et al., 2017). For this DNP project, research evidence regarding pain control was reviewed and level of evidence was graded (see Appendix A). The sixth step determined if there was sufficient evidence (Buckwalter et al., 2017). Based on evidence collected (see Appendix A), there was sufficient evidence to validate the benefit of APS. The seventh step designed and piloted the practice change (Buckwalter et al., 2017). This project took place on a post-surgical unit in a community hospital setting. The hospital had a pain referral criteria tool (see Appendix B) that was implemented on the post-surgical unit. The eighth step was a decision point that determined if change was appropriate for adoption in practice (Buckwalter et al., 2017). A pilot period was executed on the medical surgical unit in which the referral criteria was implemented from September 2018 until November 2018. Pre-pilot data mentioned in step 3 was compared to post-pilot data. Change in practice was determined based on post-pilot data results. The ninth step was integrating and sustaining the practice change (Buckwalter et al., 2017). When this DNP project was implemented on the post-surgical unit, it was embedded in the work flow of the unit due to the success of the pilot change. The tenth and final step was disseminating the results (Buckwalter et al., 2017). Data collected for this project were the number of APS consultations. Results revealed information for future recommendations and furthermore provided support that the pain referral criteria was beneficial to implement on other units in the hospital.

Literature Review

This literature review identified evidence supporting the benefits of a referral criteria to APS and the effectiveness of utilizing APS with patients. Six articles reviewed the overall benefits of having the APS team on board during the patient's stay in the hospital. One article revealed increased APS consults after an intervention including education and implementation of a referral criteria tool. Another article discussed the cost effectiveness when patients were appropriately referred to APS. Literature reviewed also examined any complications and/or incidents that occurred with patients followed by APS. All of this evidence relating to APS was important to gather for the purpose of understanding how to create the change and provide support for the change of practice being implemented. The databases that were searched include CINAHL, Cochrane Library, and PubMed. The key words: Acute Pain Service, pain referral tool, pain management, and patient satisfaction were used in different combinations using the connector "and". Articles were excluded if they were published prior to the year 2009, not written in English, and if the full text was not available online. Studies were further narrowed by inclusion criteria of in-patient population.

Reville et al. (2013) conducted a single group post-test only quasi-experimental study to examine pain referral rates following intervention of education and utilization of a referral criteria tool. This study took place in an urban teaching hospital over a 7.5 month period. Results showed that consults for pain management was significantly greater post-intervention, with $p < 0.05$. Outcomes revealed that use of education and a referral criteria tool increased the number of pain consults and improved the frequency of referrals by providers.

Deni et al. (2016) conducted a prospective observational study of 10,760 adult patients over a five year period to review specific data in order to determine the efficacy and safety of

patients managed by the APS team. Data included demographic characteristics, primary analgesic modality, adjuvant analgesic treatment, the type of surgical procedure, the Visual Analogue Scale, and analgesic-related complications. Results revealed that daily visits from the APS team resulted in adequate post-operative pain control for post-operative patients. There were no serious adverse events reported during the study timeframe. A randomized cohort study performed by Kubricht, & Sevcik (2017) studied the acute pain intensity rates based on 208 questionnaires completed by patients in two hospital settings. Results revealed that APS decreased postoperative pain intensity. These studies were strengthened by the large sample size which were studied over five years (Deni et al., 2016) and studies performed in two large hospitals, providing a variety of patients in different environments (Kubricht, & Sevcik, 2017). The limitations of these studies were the lack of information on whether these hospitals implemented any referral criteria for APS and the timeframe in which the patients were seen by APS, such as a certain amount of days since surgery or during admission (Kubricht, & Sevcik, 2017).

A prospective observational study performed by Hasan & Hamid (2015) collected data on 5,432 patients over three years to determine if any incident reporting was connected to post-operative patients whose pain was managed by APS. Results revealed that 98 incidents out of 5,432, or 1.8%, were patients managed by APS. Incidents were related to epidural care or had occurred in the post-surgical unit. Researchers concluded that there were minimal incidents with patients who were followed by APS. A prospective cohort study performed by Miclescu, Butler, & Karlsten (2017) followed 730 patients referred to APS for post-surgical and medical pain in order to understand the APS role during the patient's hospital stay. The study reviewed patient scores before and after treatment and revealed that 48% of patients reported moderate to severe

pain, and 27% reported severe pain on the initial assessment. Prior to discharge, patients followed by APS reported 25–30% less pain ($p = 0.002$) compared to the 48% of patients with moderate to severe pain and 27% of patient with severe pain. The strength of these studies was the large sample sizes (Hasan & Hamid, 2015; Miclescu, Butler & Karlsten, 2017). The limitation to the prospective observational study was the unstated minimal incidents that did occur with patients followed by APS (Hasan & Hamid, 2015). Another limitation was the sample size of 5,432 with only 1.8% of that sample being managed by APS. A prospective cohort study with a root cause analysis process performed by Paul, Buckley, McLean, Antoni, Musson, & Kampf (2014) looked at 35,384 patients managed by APS in three hospitals over a seven-year period. The study investigated patients managed by APS and their incidence of adverse events. It was found that the rate of respiratory depression decreased from 0.71% to 0.41%, the rate of severe hypotension decreased from 1.34% to 0.78%, and the rate of patient-controlled analgesia pump programming errors decreased from 0.08% to 0.0%. The strengths of this study were the large cohort of patients and the use of multiple sites for data collection, allowing representation from a wide scope of clinical services. The limitation to this study was not distinguishing the direct impact of the root cause analysis process on the adverse event reduction.

A retrospective study performed by Sussman et al. (2017) looked at 249 adults at one hospital over an eight-month period to measure the effect of a contemporary in-hospital APS team its appropriate use, and the cost-efficacy. Results indicated that patients with moderate to severe pain benefit most from in-hospital APS. The study also revealed that inappropriate referrals were made to in-hospital APS, thus negatively impacting the financial cost spent on unnecessary APS consults. In fact, appropriate referrals could result in a potential savings of \$1912.84 to \$5639.54. A limitation to this study is that the results may not be generalized,

because the data was only collected at one hospital. Practices and policies of APS may vary across hospitals leading to different results.

Upon reviewing the studies related to pain management by APS, most of the studies revealed positive impacts of APS, from patient satisfaction to decreasing adverse events (Deni et al., 2016; Kubricht, & Sevcik, 2017; Hasan & Hamid, 2015; Miclescu, Butler & Karlsten, 2017; Paul, Buckley, McLean, Antoni, Musson, & Kampf, 2014). One of the studies revealed increased APS consults with utilization of a referral criteria instrument (Reville et al., 2013). Another study discussed the importance of considering cost efficacy for utilizing APS appropriately during hospital stays (Sussman et al., 2017). With this, it was concluded that the use of a referral criteria for APS was beneficial and had positively impacted the patient's pain management, satisfaction regarding pain control, and was cost-effective for the overall hospital stay.

Upon gathering evidence though, limitations were encountered. There was limited evidence that mentioned the use of a referral criteria. Much of the literature focused generally on the APS team's impact on patients. Not much evidence revealed how patients were referred to APS or the timeframe for which APS was consulted with specific patients.

Implementation Plan

This quality improvement project focused on implementing a criteria-based referral to APS for a sample of patients. The sample size for the patients was based on the number of patients that met inclusion criteria during the 8-week implementation phase (weeks 3 to 10). The project was carried out on an adult post-surgical unit in a community hospital located in Maryland.

Procedures and Timeline

This quality improvement project took place over a 14-week period. During the first two weeks, preparation to establish two pain champions on the unit was accomplished. The unit manager contacted nursing staff and the current pain committee members to recruit those willing to become the pain champions for the project. Two pain champions helped assist with the implementation of the project by being a resource to the pilot team and answered any questions that arose during the pilot period. The pilot team consisted of day and night shift nurses that totaled up to 31 nurses. The first two weeks also included training (see Appendix D) via informal meetings with the clinical site representative, unit manager, pilot team (nurses on the unit), and pain champions on how to use the referral criteria. Printed copies of the referral criteria were placed in a binder in the nurses' station and copies were hung on the walls of the nurse's break room, bathroom, and walls around the nurses' station.

The implementation of the project occurred during weeks three through ten. The referral criteria instrument was implemented every day during an eight-week timeframe. The pilot team was trained to remind each other during handoff of care to utilize the referral criteria. During interdisciplinary rounds, time was spent to discuss the referral criteria tool with the doctor, nurses, case manager, therapy, and any other interdisciplinary team member. The DNP student was present on the unit two days a week to collect data, served as resource to the pilot team, and follow up with the pain champions regarding questions brought up from the pilot team.

Weeks 11-14 was spent on completing data collection and analysis for the project. Data collected was compared to the data collected prior to the implementation phase to see if there was an increase in APS consults.

Data Collection and Tools

The data was collected from the institution's electronic health record and was obtained throughout the pilot period and analyzed after the pilot period was over. Data collected included the number of patients that meet criteria for APS and the number of referrals made pre-implementation and post-implementation phase. Other data included the number of patients that met criteria compared to the number of referrals that were made. No demographic data was collected for this project.

Data Analysis

The data was generated from the electronic health record (EHR) by the DNP student. The Chi-square test was used to analyze the data, testing the difference in the number of referrals made pre-implementation phase and referrals made post-implementation phase. The statistical program that was used was Microsoft Excel. A run chart was created from Microsoft Excel.

Protection of Human Rights

A description of the project was submitted to University of Maryland Baltimore (UMB) Institutional Review Board (IRB) for a Non-Human Subjects Research (NHSR) determination. For approval of the project, there was no additional IRB processes required from the institution in which this quality improvement project was implemented. The data collected for this project maintained confidentiality and security by using a password protected computer. Any information collected on paper was placed in a locked file cabinet.

Sustainability of Project

This project was designed to maintain sustainability by addressing a clear need for the practice change to occur within the unit. Educating the staff on the benefits for both the patient and staff on utilizing the referral criteria as well as receiving input on the project contributed to

the sustainable change. In addition, the inclusion of pain champions from the unit and support from senior leaders of the unit helped facilitate change and continue processes.

Results

Data Collection

Post-implementation data was collected through electronic chart reports and reviews by using the hospital's electronic health record. The reports were obtained weekly for eight weeks and were specified to the unit and dates within that week. Reports were individually ran based on the following criteria: uncontrolled pain, active substance abuse, chronic pain, and the use of catheter based intravenous management. During the week, chart reviews were performed in addition to the reports. This included reviewing the patient's history and physical, current medications ordered in the hospital and medications taken at home, daily progress notes from the physician, other consulting teams, nurses, and other interdisciplinary teams, and pain assessments. Education and training on the referral criteria tool was provided to 100% of the nurses regularly staffed on the unit.

Data Analysis

All data collected was entered using Microsoft Excel. The excel spreadsheet was updated weekly, and the following information was collected: number of patients that met criteria based on the referral criteria tool separated by criteria (uncontrolled pain, active substance abuse, chronic pain, and the use of catheter based intravenous management) and the number of patients that were referred to APS (See Figures 1-3 and Table 1). The chi-square test was the statistical test used to analyze data which determined a statistically significant difference in referral rates pre-implementation versus post-implementation of the APS referral criteria.

Data

Post implementation data collected between weeks three through ten showed that 41 patients met criteria for APS. Of the 41 patients, 22 patients had APS referrals. This resulted in 53.7 % of patients that were consulted to APS post implementation. Pre-implementation findings showed that 25.3% of patients were consulted to APS. Therefore, there was a 28.4% increase in APS consults on the unit from pre-implementation to post-implementation of the referral criteria. The difference was statistically significant using the Chi-Squared test ($p= 0.002$). Results are summarized in Figures 1-3 and Table 1.

Unintended Consequences

There were some unintended consequences that occurred during the pilot period. One week had only one consult for the six patients that met criteria for APS. Some of the staff working that week were not regular staff of the unit and did not know about the referral criteria tool. This may have negatively contributed to the number of consults performed that week. In addition, two patients met criteria for APS but were not consulted to APS and were followed by Palliative Care Team. Palliative Care Team and APS team do not collaborate with one another. With this, the patients met criteria for APS but was not appropriate because they were already being managed by Palliative Care.

Discussion

This quality improvement project was implemented for the purpose of improving the management of uncontrolled pain by utilizing a referral criteria instrument to increase APS consults on patients that met referral criteria for APS. Focus was placed on increasing APS consults for the ultimate potential outcome of enhanced quality of care and improved patient satisfaction scores based on HCAHPS survey results. An anticipated outcome for this quality

improvement project was 80% of patients that met referral criteria would be referred to APS. The outcome from this project showed a 28.4% increase in APS consults, which resulted in 53.7 % of patients that met criteria for APS being consulted to APS. Similar results were shown in a literature study performed by Reville et al. (2013) which showed an increase in APS consults when a referral criteria instrument was implemented. Another anticipated outcome was an increase in patient satisfaction scored by 80%. HCAHPS reports are obtained quarterly. Therefore, the patient satisfaction scores were not able to be obtained due to unavailability of results and limited time during project period. Data from the next quarterly HCAHPS will need to be examined in order to determine if the patient satisfaction score improved during the implementation of this project.

This quality improvement project has strengths and limitations to the project. The strength of this project was the strong support and participation of the nurse manager and staff nurses. Everyone that was trained on the referral criteria instrument was open-minded and willing to adapt change. Another strength to this project was the low financial cost to implement this project. Since the project implemented a tool readily available through paper and the APS was already established within the hospital, there was very minimal financial costs to pilot this study.

Limitations to this QI project included the short-time frame for the implementation phase and the setting of one unit in a medium sized community hospital. The findings of this quality improvement project were not able to be generalized due to the small sample size (n=41) and limitations of organizational changes such as the large number of float nurses, which impacted the results of the project. Barriers to this quality improvement project was similar to other studies which were small sample sizes (Paul, Buckley, McLean, Antoni, Musson, & Kampf, 2014;

Sussman et al., 2017). Efforts made to minimize and adjust for limitations include staff retention which can play a major role in maintaining consistency of APS consults on the unit. Another limitation was the timeframe in which this quality improvement project was implemented. Due to the short timeframe, the HCAHPS survey results were not able to be obtained and the results from this study is based on an eight-week timeframe. Other limitations of the project included inconsistency in nurses that were regular staff on that unit. Upon entering the unit at times, there would be a significant number of nurses were floating to the floor due to the unit being short staffed. Limitations had to be adjusted as possible by educating the float nurses in working when the DNP student was present on the unit. Another limitation was that APS was only available Monday through Friday during 9AM-5PM business hours, making the timeframe to consult APS limited. The referral criteria instrument was also not mandatory to use and was provided as reference for staff. Staff was recommended but not required to perform any documentation on whether the referral criteria tool was used on a patient. There was no mechanism in place to follow up on failure to use the referral criteria instrument.

A major barrier that occurred during the project was obtaining access to run reports. The hospital did not provide full access for students to run reports necessary for the project. Rather, access was limited to patients that were currently in house and up to patients discharged within the past 24 hours. Student access did not allow custom reports for patients that met the criteria. With this, reports had to be obtained and relied from a variety of members in the hospital: unit manager, clinical site representative, and nurse practitioner of the APS team. However, it was discovered that if a student was already part of the hospital system prior to the project, they were given full access to run reports.

Conclusion

The purpose of this quality improvement project was to implement a referral criteria instrument in the workflow of a post-surgical unit. The Iowa Model of EBP helped guide this quality improvement project by highlighting problem identification and solution development while incorporating research findings into practice. The findings from this project demonstrated that consistent use of the referral criteria tool led to an increase in consultations of eligible patient to the APS team. This will also impact HCAHPS survey results by increasing patient satisfaction scores. The minor addition of utilizing the referral criteria instrument into the unit's workflow as well as having easy simple steps within the referral criteria helped with sustainability of the project. The Iowa Model of EBP also provided a framework that facilitated engagement from the entire organizational system, which consisted of nurses, nurse managers and educators, the APS team, providers, and patients. Other plans to sustain practice change includes engagement of the nurse manager, nurse educator, and other upper management in understanding and supporting the referral criteria instrument. The nurse manager and nurse educator were aware of the unit's need for increasing APS consults to patients that meet criteria. With this, the nurse educator on the unit can implement during new graduate nurse orientation training on the referral criteria instrument. The educator of the unit can also train additional nurses to be pain champions. Another way to sustain change will be training the doctors of the hospital on the referral criteria instrument to be familiar with the tool, thus encouraging them to consult APS when the nurses inform them that a patient meets criteria. However, barriers such as the limited access to APS from Mondays through Fridays during business hours and doctors that are resistant in ordering APS consults should be addressed first before sustainability can be achieved.

It is important to identify and address barriers that the unit has prior to implementing practice changes. Staff nurses will be more willing to adapt in change knowing that their concerns for barriers are recognized and addressed. Recommendations to this quality improvement project could have been looking at other measurements such as comparing the patient's pain score ratings pre-implementation and post implementation of the referral criteria instrument to determine if the pain scores decrease. Another recommendation would be having an orientation to the float pool nursing staff to assist them in knowing about projects on the units. Since the hospital has an in-house float pool that the unit uses frequently to maintain staff requirements on a daily basis, it is important to train all potential nurses that will work on the unit. Future plans for this project will be integrating the referral criteria instrument in the electronic health record. Over the past two years, the referral criteria instrument has been piloted on three different units. The expansion of this referral criteria instrument in a variety of settings and patients revealed strong evidence that the tool increases APS consults. Thus, there is no further need for this quality improvement project to be implemented on other units in the community hospital.

References

- Brown, C.G. (2014). The Iowa model of evidence-based practice to promote quality care: An illustrated example in oncology nursing. *Clinical Journal of Oncology Nursing, 18*(2), 157-159.
- Buckwalter, K., Cullen, L., Hanrahan, K., Kleiber, C., McCathy, A., Rakel, B., ... Tucker, S. (2017). Iowa model of evidence-based practice: Revisions and validations. *Worldview on Evidence-Based Nursing 14*(3), 175-182.
- Centers for Medicare and Medicaid Services (CMS). (2017). HCAHPS: Patients' perspectives of care survey. Retrieved from <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalHCAHPS.html>
- Deni, F., Finco, G., Corno, L., Landoni, G., Turi, S., Colnaghi, E.,... Zangrillo, A. (2016). Efficacy and safety of an acute pain service among 10,760 postoperative patients. *Signa Vitae, 12*(1), 78-90.
- Good, H. & Dunn, K.S. (2015). The prevalence of uncontrolled pain in long-term care. *Journal of Gerontological Nursing, 41*(2), 33-41.
- Hasan, S. F. & Hamid M. (2015). Incident reporting in post-operative patients managed by acute pain service. *Indian Journal of Anaesthesia, 59*(12), 789-793.
- Kubricht, V. & Sevcik, P. (2017). Chronic postsurgical pain in mixed surgical population. Does an acute pain service make a difference? *Bratislavské Lekárske Listy, 118*(12), 746-751.
- Melnyk, B.M. & Fineout-Overholt, E. (2014). *Evidence-Based Practice in Nursing & Healthcare: A Guide to Best Practice* (3rd ed.). New York: Lippincott, Williams & Wilkins.
- Miclescu, A., Butler, S., & Karlsten, R. (2017). Observational study: The changing faces of acute

- pain services. *Scandinavian Journal of Pain*, 16, 204-210. doi:10.1016/j.sjpain.2017.04.072
- National Institutes of Health (NIH). (2013). Pain management. Retrieved from <https://www.report.nih.gov/nihfactsheets/ViewFactSheet.aspx?csid=57>
- Newhouse, R.P. (2006). Examining the support for evidence-based nursing practice. *Journal of Nursing Administration*, 36(7-8), 337-40.
- Paul, J.E., Buckley, N., McLean, R.F., Antoni, K., Musson, D., & Kampf, M. (2014). Hamilton acute pain service safety study: Using root cause analysis to reduce the incidence of adverse events. *The Journal of the American Society of Anesthesiologists*, 120, 97-109. doi: 10.1097/ALN.0b013e3182a76f59
- Reville, B., Reifsnyder, J., McGuire, D. B., Kaiser, K., & Santana, A. J. (2013). Education and referral criteria: Impact on oncology referrals to palliative care. *Journal of Palliative Medicine*, 16(7), 786-789. doi:10.1089/jpm.2012.0487
- Sommer, M., de Rijke, J. M., van Kleef, M. (2008). The prevalence of postoperative pain in a sample of 1490 surgical inpatients. *European Journal of Anaesthesiology*, 25(4), 267–274.
- Sussman, M., Goodier, E., Fabri, I., Borrowman, J., Thomas, S., Guest, C., & Bantel. (2017). Clinical benefits, referral practice and cost implications of an in-hospital pain service: Results of a service evaluation in a London teaching hospital. *British Journal of Pain*, 11(1), 36-45.
- Titler, M.G., Kleiber, C., Steelman, V.J., Rakel, B.A., Budreau, G., Everett, L.Q., . . . Goode, C.J. (2001). The Iowa model of evidence based practice to promote quality care. *Critical Care Nursing Clinics of North America*, 13, 497–509.

Figure 1.

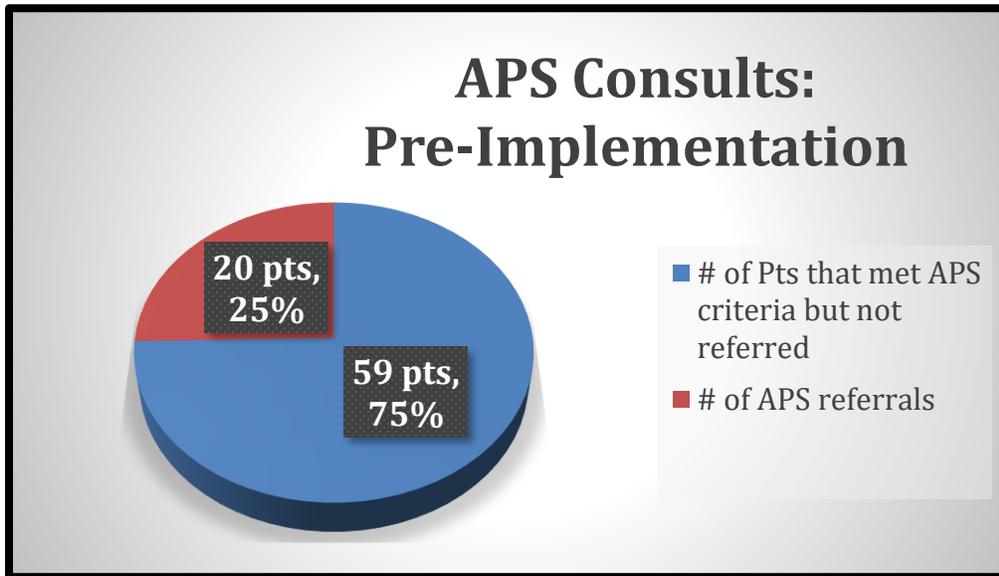


Figure 2.

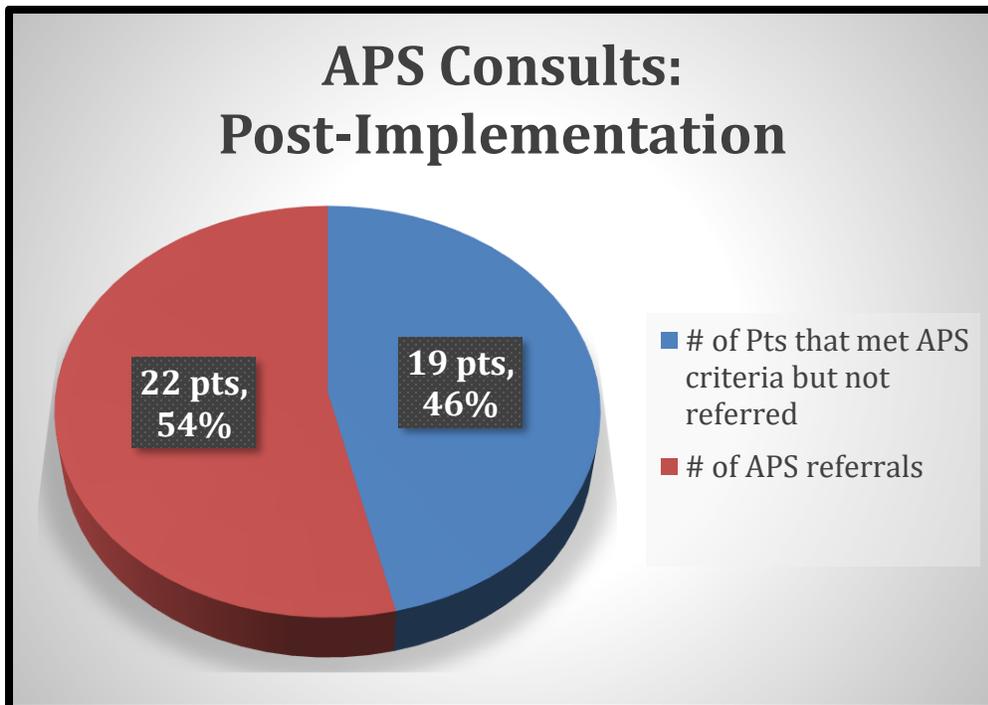


Figure 3.

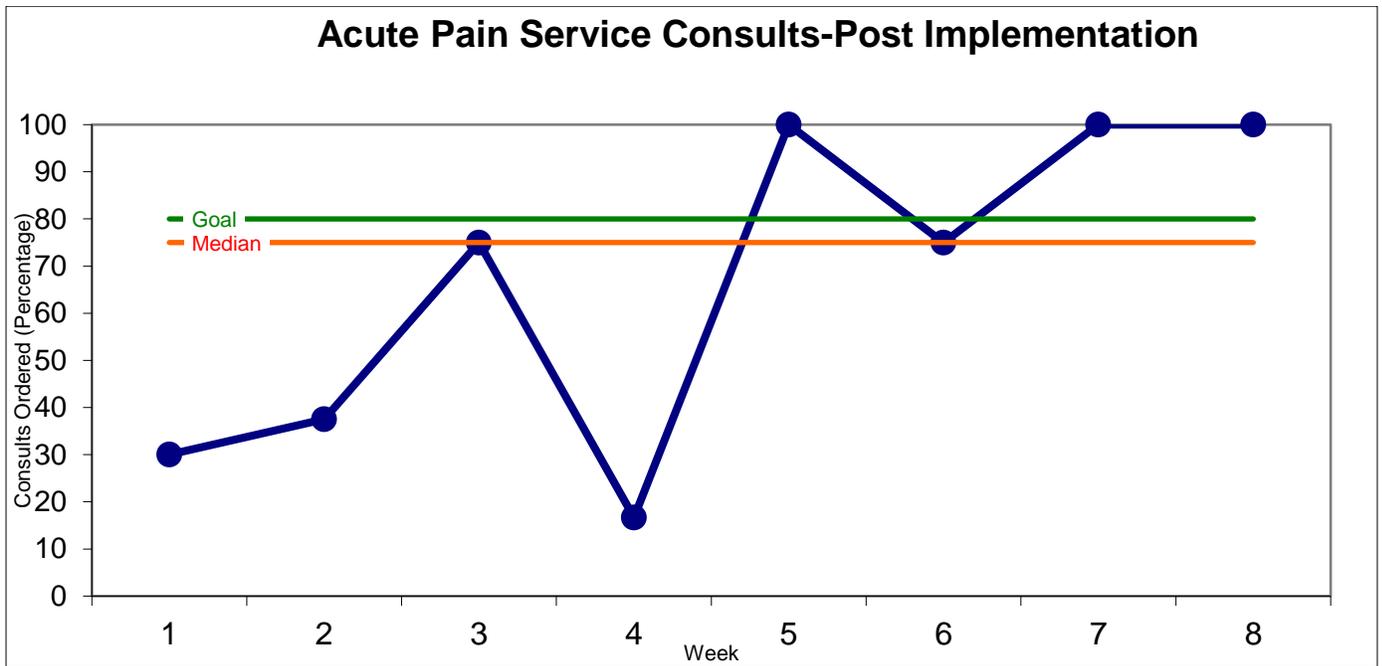


Table 1.

<i>Criteria</i>	<i>Met Referral Criteria</i>	<i># of APS Referrals</i>	<i>% of Referrals Made</i>
Long-term opioids	9	3	33.3%
Active Substance Abuser	1	0	0%
Uncontrolled Pain	17	6	35.3%
Catheter Based Pain Mgmt	14	13	92.8%

Appendix A

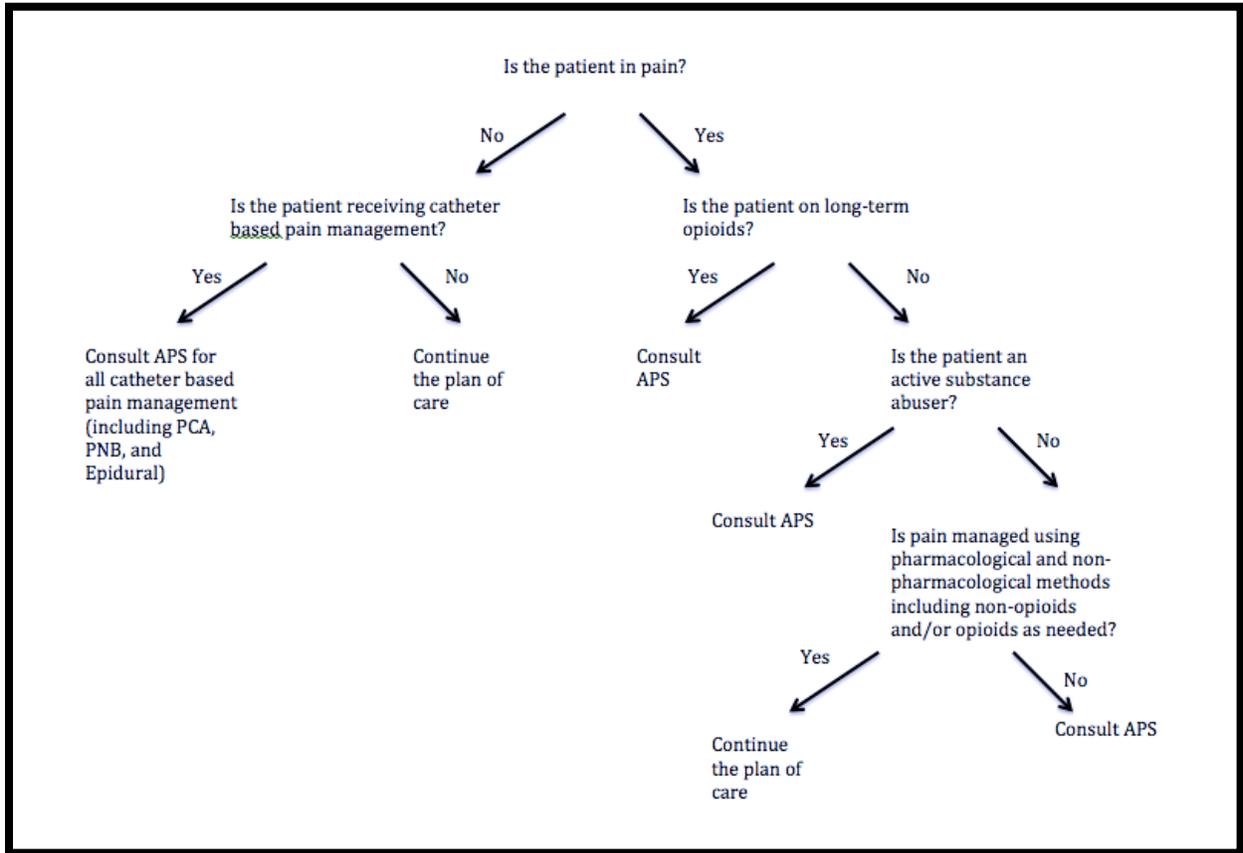
Evidence Review Table

Author, year	Study objective/ intervention or exposure compared	Design	Sample (N)	Outcomes studied (how measured)	Results	Level and Quality Rating
Deni et al., 2016	To determine the efficacy and safety of an Acute Pain Service team but reviewing data that will include results such as complications, side effects, and patient satisfaction.	Prospective observational study	N=10,760 adult patients over a 5 year period	The following data that is managed by Acute Pain Service was collected from each patient over a 5-year period: demographic characteristics, primary analgesic modality, adjuvant analgesic treatment, type of surgical procedure, the Visual Analogue Scale, and analgesic-related complications.	The following data that is managed by Acute Pain Service was collected from each patient over a 5-year period: demographic characteristics, primary analgesic modality, adjuvant analgesic treatment, type of surgical procedure, the Visual Analogue Scale, and analgesic-related complications.	IV, A
Hasan & Hamid. 2015	To investigate if incident reporting is connected to post-operative patients whose pain is managed by Acute Pain Service (APS)	Prospective observational study	N=5432 patients that were managed by APS in one hospital over a 3 year period	Number of incident reports found in patients that were managed by APS.	The study found that 98 incidents out of 5432, or 1.8%, were patients managed by APS. Incidents were due to epidural care or had occurred in the surgical unit. Although there was a low percentage based off a 3 year period, the focus of the study also determined areas that APS were involved in with incident reporting and will further focus on epidural care and ways to reduce incidents.	IV, B
Kubricht, & Sevcik, 2017	To determine if Acute Pain Service (APS) has an impact on the incidence of chronic postsurgical pain.	Randomized cohort study	208 questionnaires filled out by patients in two hospital settings.	Acute pain intensity rates based on questionnaire results.	The study found that APS decreases postoperative pain intensity. The study also found that patients in the hospital with an incidence of chronic postsurgical pain did not have acute pain service on board or consulted.	IV, B
Miclescu, Butler, & Karlsten, 2017	To determine the role of Acute Pain Service (APS) during a hospital stay for post-surgical pain and medical pain	Prospective cohort study	N=730 patients referred to acute pain	APS followed up with patients throughout the hospital stay and the pain scores before and	Acute pain service was found to be beneficial in reducing pain intensity score. 48% of patients reported moderate to severe pain and 27% reported severe pain on the initial	IV, B

Author, year	Study objective/ intervention or exposure compared	Design	Sample (N)	Outcomes studied (how measured)	Results	Level and Quality Rating
			service (APS) for post- surgical and medical pain	after treatments were reviewed.	assessment. Prior to discharge, patients reported 25–30% less pain (P=0.002). APS was also beneficial during clinical challenges of patient treatment in those with opioid dependency and chronic pain. This study proved that there is shift from focusing on traditional surgical pain to having to also care for complex patients with opioid dependency, chronic pain and psychiatric diseases.	
Paul, Buckley, McLean, Antoni, Musson, & Kampf, 2014	To investigate the incidence of adverse events (rate of respiratory depression, severe hypotension, and rate of patient-controlled analgesia pump programming errors) in patients that were managed under Acute Pain Service.	Prospective cohort study- root cause analysis	N=35, 384 patients that were managed by Acute Pain Service in three hospitals over a 7 year period.	The number of event rates from 2002-2007 compared to event rates from January 2009- December 2009- rate of respiratory depression, rate of severe hypotension and rate of patient-controlled analgesia pump programming errors.	The study found that the safety of patients were improved when they were managed under Acute Pain Service. The rate of respiratory depression (0.41 vs. 0.71%), the rate of severe hypotension (0.78 vs. 1.34%), and the rate of patient-controlled analgesia pump programming errors (0.0 vs. 0.08%).	IV, A
Reville et al., 2013	To evaluate pain referral rates following intervention of education and utilization of a referral criteria tool	Single group post-test only quasi- experimental	N= 106 patients during a 7.5 month pilot period	The following data was collected over 7.5 months at a 700-bed urban teaching hospital.	This study found that use of education and a referral criteria increased the number of pain consults and improved the frequency of referrals by providers.	IV, B
Sussman et al., 2017	To measure the effect of in-hospital pain service and its appropriate use and cost-efficacy.	Retrospective study	N= 249 adults managed by in-hospital pain services (IPS)	The following data was collected over an 8 month period: demographic data, interventions, workload and change in pain intensity measured by numerical rating scale (NRS)	This study found that patients with moderate to severe pain benefit most from in-hospital pain service input The study also revealed that inappropriate referrals were made to in-hospital pain service. Appropriate referrals could result in a potential savings of \$1912.84 to \$5639.54.	IV, B

Note. Quality Rating Scheme from Newhouse, R.P. (2006). Examining the support for evidence-based nursing practice. *Journal of Nursing Administration*, 36(7-8), 337-40.

Appendix B
APS Referral Criteria



Appendix C

Learning Objectives	Content Outline	Method of Instruction	Time Spent	Method of Evaluation
<ol style="list-style-type: none"> 1. Understanding the importance of pain management 2. Understanding the role of Acute Pain Service (APS) and the importance of APS consults 3. Understanding how to use the referral criteria tool 	<p>The pilot team will be informed of the level of uncontrolled pain experienced on the unit. They will be educated on the importance of pain management and will be educated on the importance of utilizing the APS team. The role of APS will be described. The referral criteria tool will be explained on how to use it. By the end of the educational meetings with the pilot team, the pilot team will be able to fully demonstrate how to use the referral criteria tool.</p>	<ol style="list-style-type: none"> 1. Interactive discussion and demonstration 2. Case Studies 	<p>5-10 minutes</p>	<ol style="list-style-type: none"> 1. Returned Demonstration

