ACUTE ABDOMINAL PAIN MANAGEMENT:

EDUCATIONAL EFFECT ON TIME TO ANALGESIA

BY

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DOCTOR OF NURSING PRACTICE CLINICAL PROJECT

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Dedication

To Joe, husband and best friend, the adventures continue. Thank you for all your love and support.

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Abstract

An audit of 100 charts of patients who presented to an urgent care and emergency department (UC/ED) with severe, acute abdominal pain (AAP) was conducted to determine the percentage of patients receiving analgesia and the wait times to ordering and administration of analgesia. Subsequently, a policy for AAP management was proposed for the UC/ED, and UC/ED staff received an educational intervention on AAP management. Post-education, an audit of 50 charts of patients presenting to UC/ED with AAP was conducted. The post-education outcomes of better AAP management as measured by decreased wait times to analgesia orders and administration were not statistically significant compared to the pre-intervention outcomes. Management of AAP improved in terms of the percentage of patients receiving analgesia for AAP, increasing from 48% to 66%.

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Chapter I: Executive Summary

Statement of the Problem

Patients presenting to the urgent care (UC) and emergency department (ED) at Mayo Clinic Health System-Red Cedar (MCHS-RC) were dissatisfied with pain management and wait times to analgesia as documented by eight quarters of Press Ganey patient satisfaction scores. Prior to the onset of the clinical project and in reviewing the Press Ganey (2010) scores on patient satisfaction with pain management, the UC/ED quality committee found the patient satisfaction scores for wait time and pain management were frequently below the standards set by Mayo Health Systems. Mayo Health Systems' quality standards set an expectation of 90% or above for patient satisfaction with all quality indices including pain management.

At that time, MCHS-RC (2012) had a vision of unparalleled health care. However, the quality indicator for pain management based on Press Ganey results indicated that pain control was lower than the mean in eight of 10 quarters beginning in 2009. Press Ganey (2010) surveys were the healthcare industry's most widely used patient perspective surveys. Press Ganey survey results were meant to inspire healthcare organizations to provide data-driven solutions that moved organizations toward high performance. In response to the patients' dissatisfaction with pain management, the quality committee discussed conducting a review of the current pain management process and identifying study areas that would improve pain management for patients. Focusing on one pain diagnosis offered the best pathway of assessing and improving the pain management process. Abdominal pain was one of the most common diagnoses for ED patients age 15 and older (Pitts, Niska, Xu, & Burt, 2008). As acute abdominal pain (AAP) was the most common form of pain diagnosis seen in the UC/ED, the quality committee reasoned that

impacting AAP management would improve overall pain management across the healthcare system. In fact, the most common ED visit in the U.S. has been for AAP, accounting for 7.6 million visits in 2003 (Ranji, Goldman, Simel, & Shojania, 2006).

Purpose of the Project

This quality improvement project was designed to improve AAP management in the UC and ED. The following clinical question was asked: Would wait times to ordering and administration of analgesia decrease after the UC/ED staff participated in an educational intervention focusing on the benefits of analgesics for AAP? Improved pain management would be evidenced by decreased wait times to the ordering and administration of analgesia from pre- to post-educational intervention. In considering the best sample for an UC/ED pain study, abdominal pain was selected because it was the most common UC/ED pain diagnosis at MCHS-RC and affected both males and females across all races.

The goals of the project were to improve the overall pain management process at MCHS-RC for patients presenting with AAP by (a) decreasing wait times to the ordering and administration of analgesia and (b) increasing the percentage of patients receiving analgesia for AAP. As operationalized by decreased wait times, better pain management would be achieved by means of an educational intervention to UC/ED staff on the evidence-based practice recommendations for AAP management, including the barriers to timely ordering and administration of analgesia. An educational intervention for MCHS-RC offered research-based guidelines demonstrating that analgesia for abdominal pain management did not mask or negatively affect an abdominal pain assessment and diagnosis. The UC/ED nursing staff received this education along with scripting for the reliable assessment of patients' pain levels.

Background. Press Ganey's (2010) priority index lists the top 10 quality indicators receiving the lowest patient satisfaction scores. The issue of *doctor's concern for comfort* has been in four out of the last 10 priority index results. *Informed about delays* has made the priority index nine of the past 10 priority index results. Quality improvement efforts by the MCHS-RC's UC/ED nursing staff have included scripting and nursing education. The scripting, which consisted of written cues of what to say to patients, centered on addressing a patient's pain and wait times. MCHS-RC's goal for each category was to score 90% or better compared to facilities with similar characteristics. Based on the data from the years 2010, 2011, and the final two quarters of 2009, the average score for *how well pain was controlled* was 79.75%. The average score for *doctor's concern for comfort* was 85.7%. The average priority index score regarding *informed about delays* over the past 10 quarters was 78.73%.

Prior to the onset of this clinical project, ED pain management guidelines at MCHS-RC were researched and a policy for AAP management was not found. There were no published guidelines on analgesia administration for patients who presented with AAP (Tait, Ionescu, & Cuschieri, 1999). During the project, an electronic health record (EHR) care set was developed for abdominal pain. The EHR abdominal pain care set was developed to improve efficiency with computerized provider order entry (CPOE). CPOE contributed to safe medication management through legible and complete scripts, cross-checking through the medication allergies and intolerances, offering dosage calculators related to weight or renal function, cross-checking with laboratory results, comparing drug-to-drug interactions, and reporting the recent drug alerts (Agrawal, 2009). Through CPOE, the EHR provided access to the data to measure wait times for the ordering and administration of analgesia. In 2009, the national average wait time from

registration to discharge of an ED patient was four hours and seven minutes (Press Ganey, 2010). Wait time was the greatest dissatisfaction among core ED satisfaction items (Blizzard, 2005).

Mission statement. The project's mission to improve pain management in patients presenting to the UC/ED with AAP was congruent with MCHS-RC's mission, which was "to inspire hope and contribute to health and well-being by providing the best care to every patient through integrated clinical practice, education and research" (MCHS-RC, 2012, p. 4). Pain relief contributes to health and well-being and ordering analgesia to patients once AAP has been included in the differential diagnosis was congruent with MCHS-RC's mission.

Significance for Outcomes

This clinical project was necessary to achieve improved pain outcomes and to increase overall patient satisfaction with pain management procedures. Nationally, patients who presented to EDs in severe pain had a mean wait time of 2.3 hours for analgesia and patients in moderate pain waited 6.3 hours for analgesia (Tait et al., 1999). When patients wait for pain relief, minutes may seem like hours. Unrelieved pain has the possibility of psychological and economic consequences (Jones & Ramakrishnan, 2005). MCHS-RC's UC/ED staff had not reviewed pain management data to study their own processes and outcomes. Data were needed to recognize delays in ordering and administering analgesia before patients could experience improved pain management. Similarly, education for staff on AAP management was needed to recognize and address patients' dissatisfaction with pain management, especially their dissatisfaction with wait times for analgesia. When effective, education on pain management made the following differences for patient care: It increased the percentage of patients receiving analgesia, decreased wait time to the ordering of analgesia, and decreased wait time to the administration of analgesia.

Theoretical Rationale Guiding the Project

Marion Good (1998) developed a middle-range theory of acute pain management based on the Agency for Health Care Policy and Research (AHCPR) guidelines for acute pain management (AHCPR, 1992). The AHCPR pain management goals were to (a) reduce pain, complications, and length of hospital stay; (b) educate patients regarding the importance of communicating the experience of unrelieved pain; and (c) improve patient satisfaction with pain management (Good, 1998). According to the *acute pain management theory*, effective interventions were based on attentive pain management, multimodal intervention, and patient participation (Good, 1998).

Good (1998) highlighted the importance of multimodal treatment in effective pain management. Opioids have side effects including nausea, itching, and drowsiness. The theoretical model's multimodal approach looked at both pharmacologic and non-pharmacologic components of pain management. Reviewing the research by AHCPR's multidisciplinary experts, Good (1998) formulated three propositions. Good's (Good & Moore, 1996) propositions included the following three statements:

1. Offering adequate pain medication in conjunction with pharmacologic and non-pharmacologic adjutants contributes to a balance between analgesia and side effects.
2. Regular pain and side-effect assessment, in conjunction with identification of inadequate pain relief, unacceptable side effects, and a process of intervention, reassessment, and re-intervention contribute to a balance between analgesia and side effects.
3. Patient teaching and pain relief goal setting contribute to a balance between analgesia and side effects. (pp. 76-77)

Good's (1998) acute pain management theory was designed to direct the treatment of acute, operative or traumatic, moderate to severe pain. The theory was based on several assumptions including that (a) the patient was able to learn, set goals, and communicate their symptoms; (b) providers and nurses had current pain management knowledge; (c) providers and nurses collaborated in pain management; (d) analgesic treatment was indicated; and (e) side effects were managed as needed (Good, 1998). Research demonstrated the effectiveness of pharmacologic and non-pharmacologic pain treatment. Patients suffered needlessly due to providers' and nurses' failure to regularly assess and intervene with pain until relief was actually obtained. Good's theory conceptualized mutual pain management goal setting collaboration between the patient and health care staff was essential for ideal pain management. The collaborative pain management concept was based on AHCPR expert panel consensus and not on research. Although AAP in patients who qualified for this study may not have had a traumatic cause, pain management theory could thus be used to frame interventions for abdominal pain of all etiologies.

Knowledge of ethical values may provide another supportive and consistent framework in which decisions are made to ameliorate pain and suffering (Altilio, 2006). There is a general moral obligation to relieve human suffering (Mayerfeld, 1997), and the obligation to relieve pain and suffering extends to all members of the healing professions (Cassell, 1982).

Project Stakeholders and Community Partner

A stakeholder is someone with a vested interest in a project (Lewis, 2007). The list of stakeholders for AAP management in MCHS-RC's UC and ED setting included:

1. The patients who presented with AAP and any family members.
2. The UC/ED nursing manager and staff.

3. The Nurse Practitioner (NP) and Physician Assistant (PA) providers who worked in UC/ED.
4. The ED physicians.
5. The consulting surgeons.
6. The UC/ED quality assurance team.
7. The collaborating family practice physicians.
8. The administration, as they currently approve project proposals.
9. The patient's insurance company or the payer source.
10. The Information Technology (IT) department.

The clinical mentor for this project was Dr. Joseph Heimler, who made a career change from family practice in 2009 to become an ED physician. Dr. Heimler attained his medical degree from the University of Minnesota and completed his residency at Johns Hopkins. Dr. Heimler was chosen as a clinical mentor for his dedication to the UC and ED. He was on the Practice Committee, and he was familiar with the appropriate networks and processes at MCHS-RC. He was supportive of nurse practitioners (NPs), physician assistants (PAs), and continuing professional education.

Summary

Prior to this project, as a result of Press Ganey scores of patients' dissatisfaction with overall pain management, the MCHS-RC UC/ED quality team had recognized the need to improve its pain management processes. Thus, a quality improvement project was developed to determine the effect of an educational intervention on wait times to the ordering and administration of analgesia to adult patients who presented to the UC/ED with severe AAP. Improved pain management was measured by decreased wait times to ordering and

administration of analgesia and an increase in the percentage of patients receiving analgesia. Good's (1998) acute pain theory, which was based on AHCPR guidelines, provided the framework for multimodal pain treatment and management. Education on the safe use of analgesia in AAP was provided to UC/ED nursing staff. Barriers to the use of analgesia in AAP were identified and discussed. The outcome of improved patient pain management was achieved.

Chapter II: Literature Review

Literature Related to the Problem

A literature search for this project was conducted through CINAHL Plus, Medline, Cochrane Library, and PubMed health science data bases. The search was limited to English language and full text. Search terms included *oligoanalgesia*, *acute abdominal pain*, *suffering*, *UC*, *ED*, *nurses*, *nurse practitioners*, and *pain management*. Public domain literature was researched using Google and Yahoo browser search engines. Most of the articles from the search on suffering focused on chronic pain or palliative care. As the focus of this paper was acute pain, chronic pain articles were not included in the review.

Pain was one of the most common reasons patients presented to an ED (Johnston, Gagnon, & Fullerton, 1998; Motov & Khan, 2009). Pain was reported in 75% of ED patient visits to an academic medical center (Tanabe & Buschmann, 1999). Health care providers often focused on the treatment of the under lying disease, and attending to the patients' pain was a lower priority (Wesselmann, Magora, & Ratner, 2000). Acute abdominal pain diagnosis was challenging as a seemingly benign complaint may have progressed into a serious acute pathology (Penner, Fletcher, Eamranond, & Majumdar, 2010). Oligoanalgesia, or underuse of analgesics in the face of valid indicators for their use, was the ED's most common pain management problem (Motov & Khan, 2009). A prospective study of ED pain assessment and management found that one third of patients who presented with severe pain had their pain unrelieved at the time of discharge (Ducharme & Barber, 1995). In an effort to improve pain management of this common complaint, AAP was chosen as the project focus.

According to McCraig and Burt (2004), abdominal pain was the chief complaint of over seven million patients presenting to an ED in 2002. Many ED practitioners adhered to the erroneous belief that the use of analgesia during the assessment of AAP would mask symptoms and deter an accurate and safe diagnosis. However, the present review of the literature indicated that safe use of analgesia did not interfere with or impede diagnosis.

In 1921, Dr. Cope, a respected surgeon of the time, wrote a book titled *Early Diagnosis of the Acute Abdomen*. Cope's (1921) recommendation to withhold analgesia to patients with severe abdominal pain influenced generations of healthcare providers. Eighty-five years later, in the book's 21st edition, Silen (2005) offered a tentative recommendation for the judicious use of analgesics. For decades, many providers had deferred analgesia when a patient presented with AAP.

Research studies demonstrated the continued reluctance of surgeons to support analgesia administration during AAP assessment (Knopp & Dries, 2006). Surgical consultants' reluctance to allow analgesia constrained the practice of some emergency physicians who failed to order analgesia in patients who presented with acute, undifferentiated abdominal pain (Burdick et al., 2002). Most providers deferred analgesia until after surgical consult (Ranji et al., 2006). Avoiding analgesia has been so firmly ingrained in providers' minds that it may take generations to change the practice.

No prospective trials on the use of opiate analgesia in patients with AAP existed before 1986 (Manterola et al., 2007). However, in 1979 the *British Medical Journal* published an editorial stating the urgent relief of severe pain was good and humane treatment (McHale & LoVecchio, 2001). More recent research in the form of a Cochrane review of literature by Manterola et al. (2007) supported the use of analgesia for AAP. Integration of research into

everyday emergency medicine practice has been crucial in providing humane and appropriate care to patients (McHale & LoVecchio, 2001).

As recently as the past decade, patients were still not given pain medication when they presented with abdominal pain. Analgesia was believed to mask symptoms leading to negative outcomes. Thomas et al. (2003) theorized that providers who withheld analgesia from patients with abdominal pain were not callous or uneducated in the literature supporting analgesic usage; rather, they were influenced by years of traditional abdominal pain management. Opiate analgesia given to patients with AAP mildly altered their physical exam but did not increase the risk of management errors (Ranji et al., 2006). Today, emergency physicians still feel torn between a patient's need for analgesia and consulting surgeons who feel that analgesia administration will mislead their abdominal pain assessment (Knopp & Dries, 2006).

The decision to order analgesia or not becomes dependent upon the provider's preliminary assessment and their education regarding the use of analgesia with AAP. Knopp and Dries (2006) found that changing a long tradition of ordering analgesia in AAP seems to be an evolutionary process rather than a rapid or revolutionary process. Through a literature review over the past 20 years, Knopp and Dries (2006) found that all published studies have concluded that analgesia use does not diminish diagnostic accuracy; no studies demonstrated that analgesia impaired clinical accuracy. Their study did not focus on which analgesics to offer or at what dose; rather, it focused on wait time to the ordering and administration of analgesia (Knopp & Dries, 2006).

In general, literature conclusions indicated patients who presented to EDs with moderate to severe pain were undertreated. ED pain management research cited in this document spanned decades of research focused on the issue of oligoanalgesia. Pain does not respect the patient, nor

does pain discriminate on the basis of gender, race, or age (Motov & Khan, 2009). Pain was often underdiagnosed and undertreated as a result of a variety of patient, nursing, physician, and systems factors (Pargeon & Hailey, 1999). Other studies documented additional factors contributing to oligoanalgesia, which included lack of reporting, poor communication, inadequate education of providers, and misconceptions on the part of both patients and staff (Stalnikowicz, Mahamid, Kaspi, & Brezis, 2005).

Definitions and Background

Oligoanalgesia. Again, in 1921 surgeon Sir Zachary Cope wrote a book titled *Early Diagnosis of the Acute Abdomen*. In his book Cope (1921) wrote that withholding analgesia in patients with AAP was necessary in order to assess patients accurately. He theorized that morphine would inhibit an accurate assessment by masking symptoms. Cope (1921) wrote, "Though it may appear cruel, it is really kind to withhold morphine until one is certain or not that surgical interference is necessary" (p. 5).

Wilson and Pendleton (1989) first coined the term *oligoanalgesia* as the nontreatment or undertreatment of pain. They performed a chart review of 198 patients who presented to the ED with pain from acute medical or surgical conditions. Only 44% of patients received analgesia. Of the 44% of patients who received analgesia, 42% waited more than two hours for narcotic analgesia administration. Of the patients who received analgesia, 32% received less than an adequate analgesic dose. The findings included inconsistent pain assessments, delays to analgesia, sub-therapeutic dosages of analgesia, and untreated pain.

According to Knopp and Dries (2006), a current review of research literature indicated continued reluctance on the part of surgeons to accept the administration of analgesia during the

evaluation of an acute abdomen. Consultant reluctance to use analgesia has constrained the ordering of analgesia by some emergency physicians to address AAP (Burdick et al., 2002).

Todd, Sloan, Chen, Eder, and Wamstad (2003) performed a cross-sectional study of 525 patients who were admitted to two university-based EDs with high pain levels. The purpose of the study was to assess pain etiologies, patient pain experiences, pain management practices, and patient satisfaction with pain management. Analgesia was ordered and administered to 50% of the patients. At discharge, 48% of the treated patients still reported moderate to severe pain. The patients also reported that 57% of their ED stay was spent in moderate to severe pain. Despite these findings, patients still reported high satisfaction with their ED visit.

In a subsequent study, Todd et al. (2007) evaluated ED pain management practices in a multicenter chart review in 20 U.S. and Canadian hospitals. After lengthy delays of 90 minutes or longer, 60% of patients received analgesia, with 74% of patients discharged in moderate to severe pain.

Pain. The acknowledgement and management of pain are influenced by multiple factors which influence the perception and expression of pain in a health care setting and depend upon the interpersonal experience between the sufferer and the reliever (Farber-Post, Bluestein, Gordon, & Neveloff-Dubler, 1996). Pain is the third most common health care complaint (Downey & Zun, 2010). As a public health issue in America, pain management was estimated to cost $560 to $635 billion annually (IOM, 2011). The estimated pain management cost included the incremental health care costs and lost productivity. More concerning, the report compared costs to the 2008 pain management costs for federal and state governments, which was $99 billion; costs increased over five and a half times in three years.

The International Association for the Study of Pain (IASP, 2011) defined pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (p. 3). The American Academy of Pediatrics (2001) policy statement recognized that pain is an inherently subjective experience and should be assessed and treated as such: "Pain has sensory, emotional, cognitive, and behavioral components that are inter-related to environmental, developmental, socio-cultural, and contextual factors" (p. 793). The human experience of pain impacted patients' quality of life (Ferrell, Grant, Padilla, Vemuri, & Rhiner, 1991).

Neglected pain management has been found to be harmful and unnecessary (Johnson, 2005). Unrelieved, acute pain made patients vulnerable to chronic pain patterns (Fosnocht, Swanson, & Barton, 2005). Patients with untreated pain had an increased potential for complications after medical treatment (Drayer, Henderson, & Reidenberg, 1999). Yet, a reduction in pain levels was directly related to the patients' increased distress relief, improved rapport with their provider, and improved intended compliance with discharge instructions (Downey & Zun, 2010).

A patient's perception of pain was influenced by age (Cavalieri, 2005); gender (Rafferty, Smith-Coggins, & Chen, 1995); and culture (Todd, Deaton, D'Adamo, & Goe, 2000). In an observational, prospective study, Guru and Dubinsky (2000) compared the patient's perspective on pain to that of the caregiver's. Using a visual analogue scale (VAS) and a numeric rating scale (NRS), the patient, the nurse, and the physician rated each patient's pain. On average, nurses and physicians rated ED patients' pain lower than the patients' own ratings. In addition, among 68% of patients who received analgesia, 49% experienced no pain relief. Still, 50% of the patients with no pain relief were satisfied with their care.

Suffering. Despite the availability of effective interventions, pain and suffering are often undertreated (Fleming, 2002). Pain and anxiety may result in anorexia, insomnia, depression, and feelings of helplessness and hopelessness (Jones & Ramakrishnan, 2005). Unrelieved pain results in suffering. Suffering is "a state of severe distress associated with events that threaten the intactness of the person" (Cassell, 1982, p. 639). Focusing on the ethical perspective of suffering and the goals of medicine, Cassell (1982) described the essence of suffering: Suffering is experienced by the person, it occurs from the moment the person perceives the threat of impending destruction to the time the threat is gone or the integrity of the person is restored, and suffering may occur in any aspect of the person.

The Agency for Health Care Policy Research (AHCPR) reported health care professionals were ethically obligated to provide pain management and relieving suffering (AHCPR, 1992). In an effort to relieve suffering, providers and patients needed to model shared decision making as a pain management strategy (Jansen, 2001). To successfully relieve suffering and pain, providers and nurses should be taught to hear "the fragmented language of pain, coax it into clarity, and interpret it" (Scarry, 1985, p. 3).

The Joint Commission. The Joint Commission on Accreditation of Hospitals Organization (2011) mandates effective pain assessment and treatment for all patients. The Joint Commission (2011) accredits and certifies U. S. healthcare organizations that meet certain performance standards. The Joint Commission's (2011) mission is to improve healthcare standards and inspire facilities to "excel in providing safe and effective care of the highest quality and value" (p. 2). The Joint Commission's (2011) safety goal requires healthcare facilities to accurately and completely reconcile medications across the continuum of care. Medication reconciliation is "the formal process for creating the most complete and accurate list

of a patient's medications and comparing the list to those in the patient's record or medication order" (Joint Commission, 2011, p. 1). The Joint Commission's (2011) safety report increased awareness of the importance and need for accurate medication reconciliation.

The current Joint Commission was founded in 1951, but the organization began in 1910. According to the Joint Commission history (2011), Ernest Codman, M.D. originally proposed the "end result system of hospital standardization" in 1910 (p. 1). Conversely, if the treatment was not effective, the hospital would then attempt to determine why not. In 1917, the American College of Surgeons **(**ACS) developed the *Minimum Standard for Hospitals* (ACS, 2006). At that time the requirements filled just one page. By 1951, the Joint Commission was created to provide voluntary accreditation. Congress passed the Social Security Amendments of 1965, requiring that hospitals accredited by the Joint Commission must be in compliance with most Medicare conditions and eligible to participate in the Medicare and Medicaid programs (Social Security Administration, 2012). Medication reconciliation encouraged better communication of healthcare information, resulting in better health care.

Joint Commission surveyors perform unscheduled site visits to assure that the healthcare organization requesting accreditation or re-accreditation meets protocols. Joint Commission results are publically reported. Examples of Joint Commission (2011) patient safety goals include that two identifiers are used to identify patients, all medications are labeled prior to administration to patients, medication reconciliation is completed with each patient, and the patient or caregiver is given a copy of the medication list on discharge. The Joint Commission (2011) reasoned that accurate communication of patient medications reduces the risk of transition related adverse drug events.

Press Ganey. Press Ganey (2010) surveys are the healthcare industry's most widely used patient, employee, and physician perspective surveys. They focus on performance improvement through quality assessment assistance to over 10,000 healthcare facilities. This includes over 50% of all U.S. hospitals. The purpose of the survey results is to inspire healthcare organizations to achieve high performance with data-driven solutions to problems of patient care. Their surveys are sent to patients post-visit for evaluation of specific quality control measures. The results are compared to other hospitals of similar size and may be departmentally specific.

The history of Press Ganey began in 1984 when Dr. Press gave a presentation stressing the importance of survey methodology when establishing a patient satisfaction program. Dr. Press teamed with Dr. Rod Ganey, who had expertise in research, statistical analysis, and survey methodology. Press Ganey's vision remains helping healthcare organizations improve quality, increase market share, operate efficiently, and optimize reimbursement.

Identifying Stakeholder Barriers

The literature review related to the problem highlighted key stakeholders' roles in the management of AAP. The literature identifying barriers inhibiting ideal pain management included barriers related to the provider, nursing, patient, and facility.

Providers. Provider-related pain management barriers included work flow, assessment skills, and opiophobia. Lack of health care worker training was considered one of the biggest obstacles for effective pain treatment services (Lohman, Schleifer, & Amon, 2010). Providers in an UC/ED environment were often familiar with team patient management. A multimodal intervention should begin with accurate pain assessment followed by offering analgesia, if appropriate. Provider contribution to barriers to ideal pain management included (a) interrupted/distracting work flow, (b) concerns about drug seeking behavior,

(c) altered/skeptical perception regarding the patient's pain assessment, and (d) historical influence on limiting the use of analgesia. The number of break-in tasks and interruptions to ED physicians were evaluated in an observational study of three EDs. An interruption was defined as a break in concentration while performing a task. For example, when an acute patient was wheeled into the ED, the provider interrupted their current task and changed their thought process to manage the more acute patient's care. In a three-hour time span, 20 break-in-tasks and 30 interruptions changed the physicians' focus or activity (Chisholm, Collison, Nelson, & Cordell, 2000).

Sufficient resources to provide appropriate care contributed to an effective work flow. Room availability was often an issue in an UC/ED with only a three-trauma room and a two-procedure room. In a retrospective cohort study, Pines and Hollander (2008) evaluated the impact of crowding on delays of treatment and non-treatment for ED patients in severe pain. They found that 49% of patients received analgesia. Of those patients receiving analgesia, 59% experienced treatment delays from triage.

The decision to order analgesia depended on providers' preliminary assessment and their education regarding the use of analgesia with acute pain. Guru and Dubinsky (2002) found that physicians and nurses gave statistically lower pain scores than the patients did. Provider pain assessment and reassessment were performed but were not always documented. An AAP care set was built into the electronic medical record (EMR) prior to the project onset. Pain level documentation should be required on all patients (Phillips, 2000). While the EMR was designed to improve documentation, including documentation of pain, barriers to successful use of the EMR included usability, work flow, and computer literacy (Cork, Detmer, & Friedman, 1998). Saigh, Triola, and Link (2006) looked at physician compliance in using the EMR to document

pain assessment and management. The observational, cross-sectional survey found that physicians' documentation included a pain evaluation of the patient 49% of the time at pre-intervention and 44% of the time at post-intervention.

The term *opiophobia* was introduced by Morgan (1985) to describe provider fear or concern regarding the use of opioid analgesics. Motov and Khan (2009) discussed possible reasons for opiophobia including lack of knowledge regarding opioid analgesics and negative views of patients requesting opioid analgesia. Contributing objections may include (a) lack of education, (b) concern for respiratory suppression, (c) suspicion of drug-seeking behavior, (d) concerns about multi-pharmacy, (e) concerns about addiction or tolerance, (f) inconsistent or inappropriate patient use of health care, (g) concerns about masking symptoms, and (h) regulatory or licensing concerns.

Regretfully, Cope's (1921) warning against the use of analgesia for abdominal pain, although not evidence-based, became a dogma that has been difficult to overcome (Silen, 1987). Despite 20 years of research supporting the effective and safe use of analgesia, some providers remain reluctant to order analgesia due to concerns about masking symptoms.

Although the majority of available research was based on physician studies, NPs and PAs also work in the ED. NPs and PAs are also responsible for providing quality patient care including effective pain management.

Nursing. Nursing has played a key role in pain management. Here, pain management barriers included patient care process, work flow, knowledge, and ability to advocate. From the initial triage assessment of the patient's pain through the administering of ordered analgesia and attentive care, nurses' responsibility for effective pain management did not end until the discharge or transfer of the patient. As licensed professionals, nurses were responsible for pain

assessment and the administration of analgesia (Blondal & Halldorsdottir, 2009). With the exception of pre-approved order sets, nurses were dependent upon the provider to order analgesia. Certain EMR medication ordering processes also required waiting for pharmacy approval before the nurses could administer the analgesic. ED nurses understood that waiting for pharmacy approval could delay the administration of analgesia which, in turn, would delay pain relief.

Organizational barriers inhibiting a nurse's responsible management of a patient's pain included work flow, time constraints, interruptions, and insufficient prescribed analgesia (Schafheutle, Cantrill, & Noyce, 2001). In order to provide cost effective care, hospitals were staffing fewer nurses, resulting in their responsibility for larger numbers of patients. This increased case load inhibited time for effective pain assessment and management.

Nurses experienced ethical conflicts between institutions' pain management policies, providers' orders, and patients' pain scores when they deviated from nurses' values and beliefs (Lerners & Beardslee, 1997). A qualitative research study regarding ethical dilemmas and decision making was conducted from nurses' perspectives. The results indicated that nurses used moral attributes of caring in their ethical decision making. Attributes of caring were described as personal values, intuition, relationship, and empathy.

Further barriers to ideal pain management included nurses' education, experiences, collaborative relationships, and work flow. Nurses' knowledge and attitudes may have affected their patient care, judgment, and decision-making (Rieman & Gordon, 2007). One barrier to effective pain management was nurses' anxiety regarding respiratory depression and addiction as possible consequences of narcotic use (McCaffery, 1999). Nurses' concerns about pain

management were affected by their relationships with physicians (Van Niekerk & Martin, 2002). Nurses often felt they had little voice in what physicians prescribed for pain (McCaffery, 2002).

Nurses' assessment of patients' pain may differ from the nurses' perception of patients' pain. Nurses underestimated patients' pain levels in both triage and clinical areas (Puntillo, Neighbor, O'Neil, & Nixon, 2003). In a chart comparison study, nurses pain assessment scores, using a 0-10 NAS, averaged 2.4 points lower than patients at triage and 3.7 points lower than patient scores in clinic. The variation between nurses' and patients' scores did vary depending on chief complaint. Nursing education on assessment and acceptance of patients' pain scores were recommended to decrease the discrepancies in pain intensity ratings (Puntillo et al., 2003).

Four motivating factors affected nurses' commitment to seeking pain relief for patients including (a) moral obligation, (b) nurses' formal and tacit knowledge, (c) nurses' personal experiences, and (d) nurses' self confidence and convictions (Blondal & Halldorsdottir, 2009). Patients in pain in an unfamiliar environment were, and continue to be, vulnerable. Pain and suffering rob human beings of their dignity (Pullman, 2002). In Blondal and Halldorsdottir's (2009) phenomenological study, a strong moral respect and sense of duty were apparent in the nurses' response to patients' pain.

Recognizing nurses' responsibility toward effective pain management, a process approach to improving pain management was found to be effective (Kelly, 2000). In a chart review to measure the effects of a process improvement project, a multidisciplinary team reviewed the current pain management process in the ED, identifying major deficiencies towards effective pain management. The deficiencies included inadequate and inconsistent pain assessment and documentation, inadequate dosing of analgesia, inappropriate routes of analgesia administration, delays in administration of analgesia, and pain management not being viewed as

a priority in the patient care process. The strategies implemented to offset the deficiencies included routine patient pain assessment, changing the department culture to include pain management as a high priority process, and titrating intravenous opioids instead of administering a one-time intramuscular injection (Kelly, 2000). Charts were reviewed of 162 ED patients admitted prior to the process change and 83 ED patients post process change (Kelly, 2000). The results demonstrated a significant improvement in pain management by titrating intravenous pain medication versus administering intramuscular injections. In the pre-process change group, 53% of patients received intramuscular injections and 6% received intravenous titrated opiates. In the post-process change group, 54% received intravenous titrated opiates and 5% received intramuscular injections. There was a two year time difference between the admission of the pre-process change group and the post-process change group. The time difference was selected to demonstrate durability of the process change.

Patient. Patient barriers to ideal pain management included gender (Rafferty et al., 1995), narcotic seeking (Hansen, 2005), communication, and healthcare literacy (Schafheutle et al., 2001). Patient participation in pain management depended on clear communication. Patients and their families presented to the UC/ED for a variety of physical, psychological, cultural, and socio-economic reasons. Patients' histories influenced their perception of health care. Jones and Ramakrishnan (2005) found that patients' self perception of pain was the most reliable indicator of pain intensity. Patients and/or their family members needed to be able to communicate with healthcare staff to facilitate collaboration of care.

There were various reasons why patients were unable to clearly communicate their healthcare needs. Barriers to communication included cognition, education, social skills, age, and cultural influences. ED patients often refused pain medication (Schafheutle et al., 2001).

Social mores influenced patients' pain reporting or request for analgesia. Social adages such as *no pain, no gain* or *cowboy up* were used by ED patients to suppress expressions of pain. Folk wisdom such as *if it hurts, you must be healing* has passed from generation to generation. Nicol and Ashton-Cleary (2003) studied pre-presentation analgesia in ED patients. The qualitative study of 60 patients demonstrated various reasons why 75% of the patients did not take any analgesia prior to their visit. Several of the reasons were time constraint, lack of availability, and the thought that the available medication was not strong enough to work.

The reasons narcotic-seeking patients chose EDs included patient anonymity, limited access to medical records, the fact that larger cities had multiple EDs, and the Emergency Medical Treatment and Active Labor Act (EMTALA), which obligated EDs to assess and stabilize a patient's pain (Curtis & Morrell, 2006). Patients who displayed narcotic-seeking behavior also had a high incidence of psychiatric disease. In a prospective, case-controlled study of 85 patients, Chelminski et al. (2005) reported that patients with opioid-treated chronic pain and psychiatric disease had a 32% incidence of substance abuse.

Patients who inappropriately seek narcotic medication contributed to provider opiophobia, or fear of prescribing opioid analgesics. Hansen (2005) reported that approximately 4.2% of ED visits were constituted by patients seeking narcotic medication. Although this was a small percentage of the patients seen in the ED, they were frequently well-remembered by ED providers, thus influencing future prescribing practices.

Several studies addressed gendered pain evaluation and gender bias in analgesia administration. In a prospective cohort study, Rafferty et al. (1995) demonstrated that female patients received more and stronger analgesia. The study further demonstrated that not only did

female patients report more pain than male patients, but providers assessed the female patients to have more pain than the male patients.

Facility's responsibility. Curtis, Henriques, Fanciullo, Reynolds, and Suber (2007) focused on the introduction of a pain management protocol. The results showed the percentage of patients receiving analgesia increased from 44.4% to 74.6% after introduction of the protocol. The time to receiving analgesia decreased from 53.61 minutes to 27.94 minutes. Patients receiving analgesia experienced no increase of adverse effects as a result of pain medication administration.

Facility responsibility was not mentioned in Good's pain management theory. However, healthcare organizations were held accountable for effective pain management. Distributive justice, or fairness in allocation of the burdens and benefits of society, influences the development of health care policy (Jameton, 1976). Implementing and following protocols and guidelines for management of oligoanalgesia were shown to have improved patient satisfaction with pain management. Joint Commission, American College of Emergency Physicians (ACEP) and EMTALA required recorded pain assessment for all ED patients by use of pain scales (Motov & Khan, 2009). When followed, healthcare guidelines existed to protect providers from prosecution not to serve as standards of care (Lawrence, 2005). Pain assessment instruments were used infrequently in an ED, despite adequate analgesia being a quality control measure (Stephan et al., 2010).

Literature Related to Theoretical Rationale

Good and Moore (1996) initially developed a middle-range theory with a focus on acute pain. Their concept was to manage both the sensory and affective components of pain. Good's (1998) theory of acute pain management was based on AHCPR guidelines and focused on both

pharmacologic and non-pharmacologic interventions. Based on expert research, the theory's propositions stated that effective pain management required multimodal intervention, attentive pain management, and patient participation and contribution.

Good's (1998) three propositions were utilized in the present study. The multimodal interventions included the offer of analgesia and a discussion with the patient of their perception of pain and their preferred form of management including injection or intravenous administration, frequency of titration, and adjuvant therapy. Attentive pain management was assessed by hourly pain measures, nurse observation, and input on aggravating and relieving factors. Patient participation was assessed by patients' verbal agreement with the pain management and plan; education regarding risks, benefits, and potential outcomes; and mutual patient-provider goal setting.

"Because this theory is based on research and the AHCPR guideline recommendations, the theory provides clear, substantive, empirical knowledge of nursing practice" (Good, 1998, p. 124). Telling a patient you recognized their pain versus patient participation in multimodal pain management made a difference in the patient's perception of pain.

Good's multimodal pain theory was trialed in a randomized controlled study of the effects of relaxation on postoperative pain (Good et al., 1999). The repeated test was performed in five U.S. hospitals. A convenience sample of 468 patients was scheduled for AAP surgery, and they were expected to receive patient controlled analgesia (PCA). The patients were randomly assigned to one of four groups: relaxation, music, combination, and control. The study concluded that relaxation, music, and the combination of the two reduced pain similarly on postoperative days 1 and 2 and during ambulation and rest (Good et al., 1999). Multimodal pain theory was also tested in postoperative pain management after a total knee arthroplasty (TKA)

(Otten & Dunn, 2011). Based on a literature review supporting the concept that inadequately controlled, severe pain inhibited or prevented functional rehabilitation, a multimodal pain approach was tested. A retrospective chart review of 257 patients' TKA postoperative results indicated those patients receiving three pain modalities (intrathecal morphine sulfate, single-shot femoral nerve block, and wound catheter) had better pain control postoperatively and requested fewer opiates (Otten & Dunn, 2011).

Good's theory using alternative pain management therapies for the sensory and affective components of pain was further tested on the effects of music on power, pain, depression, and disability. In a randomized controlled clinical trial with 60 non-malignant pain patients, patients were randomly assigned to one of three groups (Siedlicki & Good, 2006). The three groups were the standard music group (n = 22), the patterning music group (n = 18), or the control music group (n = 20) (Siedlicki & Good, 2006). Educating patients on the use of their preferred music demonstrated an enhanced effect of analgesia, resulting in decreased pain, depression, and disability measurements and increasing the patients' feelings of power (Siedlicki & Good, 2006).

A randomized clinical trial of the non-pharmacologic nursing methods of relaxation, chosen music, and their combinations was tested on 167 randomly assigned post intestinal surgery patients (Good, Anderson, Ahn, Cong, & Stanton-Hicks, 2005). Patients were tested on post-operative days one and two while ambulating and at rest. There was significantly less pain in the intervention group compared to the control group (p = .024–.001), resulting in 16–40% less pain (Good et al., 2005). The researchers noted that nursing alternative interventions did not negate the need to administer ordered analgesia.

Literature Related to Outcomes

The most noteworthy point regarding the past 20 years of AAP management research was the resulting conclusion: Analgesia did not appear to impair diagnostic clinical accuracy. No methodologically sound study demonstrated that administering analgesia impaired clinical diagnostic accuracy (Knopp & Dries, 2006). The literature review for this study found 32 articles on AAP management which supported the safe use of analgesia.

For example, a randomized, prospective, placebo-controlled trial investigating differentiation in physical exams following the administration of either morphine or a placebo in patients with AAP demonstrated no adverse events or diagnostic delays due to analgesia use (LoVecchio et al., 1997). The AAP patient study groups were those given high dose (10 mg) morphine (n = 19), low dose (5 mg) morphine (n = 13), or a placebo (n = 16) (LoVecchio et al., 1997). There was a change in tenderness and localization during the abdominal exam of some patients after the administration of analgesia (LoVecchio et al., 1997).

Tait et al. (1999) conducted an audit of 100 charts to determine the practice of analgesia administration in patients with AAP. The audit found that the outcome measures of wait time for analgesia were influenced by severity of pain, clinical diagnosis, and clinical setting. Results indicated that 43% of the patients waited too long for analgesia (average wait time of 5.7 hours), analgesia was not ordered in 57% of the ED patients, and medical staff were reluctant to administer analgesia for fear of masking signs and symptoms (Tait et al., 1999).

Thomas et al. (2003) measured the effects of analgesia on the physical examination and diagnostic accuracy for patients who presented to the ED with AAP. A double blind clinical trial of adult AAP ED patients randomized participants to receive morphine sulphate (n = 38) or placebo (n = 36). The morphine and placebo groups were compared using univariate statistical

analysis on the outcomes of diagnostic accuracy and physical exam (Thomas et al., 2003). Differences in physical or diagnostic accuracy were not found between the groups. The results supported early analgesia use in patients with AAP.

In a study to test the hypothesis that analgesia would not inhibit an accurate assessment and diagnosis of a patient in AAP, 153 patients participated in a randomized double-blind study (Gallagher, Esses, Lee, Lahn, & Bijur, 2005). Seventy-eight patients were given morphine for AAP, and 75 patients were given a placebo. Although the administration of morphine resulted in up to a 12% difference in diagnostic accuracy, the conclusion supported the safe use of morphine analgesia to decrease pain without impairing diagnostic accuracy (Gallagher et al., 2005).

In a similar study with a randomized double-blind design, Amoli, Golozar, Keshavarzi, Tavakoli, and Yaghoobi (2008) showed that administering analgesia to patients in AAP with acute appendicitis did not affect diagnostic accuracy in a teaching hospital in Iran. The research study was conducted to measure pain intensity and analgesia use as it affected the diagnosis of appendicitis. Of the study's 71 participants, 34 patients received morphine and 36 patients received placebo. One of the patients left the hospital before receiving morphine. The research supported the hypothesis that morphine was safe and efficacious in patients with AAP that resulted in appendicitis.

A literature review explored the historical reasons for withholding analgesia, the consequences of withholding analgesia, and evidence supporting the use of analgesia in patients presenting with AAP (Jones & Kalyanakrishnan, 2005). Search terms of *oligoanalgesia*, *analgesia in abdominal pain*, and *opioids in abdominal pain* were used in the English language. Results indicated that unrelieved pain had serious adverse physiological, psychological, and economic consequences (Jones & Kalyanakrishnan, 2005). Use of analgesia did not inhibit and

may have facilitated an accurate diagnosis in patients with AAP. Literature review supported prompt and aggressive treatment to relieve AAP.

Another literature review determined the impact of opiate analgesia on clinical exam and operative decision for patients with AAP (Ranji et al., 2006). MEDLINE and EMBACE were searched for articles in which placebo-controlled, randomized trials of opiate analgesia resulted in reported changes in the history, physical examination, or diagnosis (Ranji et al., 2006). Results indicated that opiates may alter physical exam but there was no significant increase in pain management errors.

In an effort to provide a system-wide standard of care to reduce pain and suffering in patients, the Veterans Health Administration (VHA) enacted their National Pain Management Strategy (Kerns et al., 2006). The VHA report recommended multidisciplinary education and training to promote provider pain management competency. The VHA plan further recommended education on effective pain assessment and both pharmacologic and non-pharmacologic pain management. Educating providers regarding patients' pain barriers will allow providers to recognize and address those barriers resulting in ending needless suffering (Ducharme, 2005).

An educational program on acute pain resulted in beneficial short-term improved pain management, analgesia, and patient satisfaction in an ED setting (Decosterd et al., 2007). A prospective pre-post intervention cohort study of adult patients admitted for acute pain was conducted with 249 pre-intervention and 192 post-intervention charts. The measurements for pain management pre- and post-educational intervention included administering analgesia, pain documentation, morphine dosages, non-steroidal anti-inflammatory (NSAID) and acetaminophen administration, reduction in pain score, and patient satisfaction. There were significant increases

in pain documentation and administration of morphine, NSAID, and acetaminophen analgesia. There was a decrease in post-intervention patient pain scores, which was the measure for patient satisfaction (Decosterd et al., 2007).

A review of the benefits of health care education showed that transdisciplinary education has been proven to improve health care outcomes (Nandiwada & Dang-Vu, 2010). Interdisciplinary team education and development was one of the five tenets of health care education reform stated in the Institute of Medicine's report *A Bridge to Quality* (IOM, 2003). Inter-professional education produced positive outcomes in the emergency department and improved collaborative team behavior and reduced error rates (Reeves, Zwarenstein, Goldman, Barr, Freeth, Hammick, & Koppel, 2008).

The staff of a hospital in Switzerland developed a pain management algorithm in the form of a decision tree (Tamches et al., 2007). Based on an international literature review of health care practices regarding acute pain management in EDs, the staff converted clinical practice guidelines into a decision tree (DT). An external validation of the DT was through feedback from the heads of hospital departments who had patients present for follow-up visits after treatment in the ED. Internal education and distribution of the DT over the period of one month was performed by a designated staff member. The results demonstrated not only an improvement in the treatment of acute pain but also demonstrated an improvement in teamwork.

Structured health care education teamed with the computerized data forms improved diagnostic accuracy and clinical decision making in patients with acute abdominal pain (deDombal, Dallos, & Mc Adam, 1991). A prospective assessment of effects of support methods on physician groups in an urban hospital and a rural hospital demonstrated increased benefits with teaching and computer aided decision support.

Summary

This project included a comprehensive search of the literature in the following areas: oligoanalgesia, AAP, and pain management including literature related to the scope and nature of the problem, literature related to the theoretical framework for this project, and literature related to the project methods and outcomes. Results provided evidence for the design and significance of the project. Results informed stakeholders and allowed them to recognize either their contribution or the barriers to effective pain management.

In sum, providers, nurses, and patients all need to work together to recognize and mitigate barriers to effective pain management. Oligoanalgesia, or undertreatment of pain, continues to be a concern in AAP management in the UC/ED. Good's midrange multimodal pain theory recognized the need for multiple pain treatment modalities for acute pain management and is a suitable framework for clinical projects of this type. A review of the literature demonstrated that the use of analgesia did not inhibit and may actually facilitate an accurate diagnosis in patients presenting with AAP.

Chapter III: Implementation

Introduction

The purpose of this quality improvement project was to improve AAP in the UC and ED at MCHS-RC. The following goals were set to achieve that purpose: Goal 1 was to increase effective pain management for patients presenting with AAP as measured by decreased wait times from the time of registration to the ordering and administration of analgesia. Goal 2 was to improve overall pain management in the UC/ED as measured by triage nurses' pain assessments recorded at all AAP visits and providers ordering analgesia for an increased percentage of AAP patients. Pain levels were assessed through collaborative agreement between the patient, nursing staff, and provider.

Objectives

The objectives for Goal 1—to increase effective pain management for patients presenting with AAP, as measured by decreased wait times to ordering and administration of analgesia—included the following:

- Triage nurses would record pain scores for AAP patients at 100% of visits, using a 1-10, NAS scale.
- Scripts for nursing staff that acknowledged concern for patients' pain would be presented to nursing staff in a training session by October 13, 2011.
- An educational intervention in the form of a *Lunch and Learn* would be approved and scheduled by October 4, 2011.

- The UC/ED staff would receive the educational intervention two months prior to the start of post-education data collection; the Lunch and Learn would be offered on November 14, 2011.
- AAP patients' pain scores would be acknowledged by providers as evidenced by documentation of offered analgesia at 70% of patient visits.

The objectives for Goal 2—to improve overall pain management in the UC/ED as measured by triage nurses' pain assessments recorded at all AAP visits and providers ordering analgesia for an increased percentage of AAP patients—included the following:

- Discussion with the UC/ED quality team was held in January 2011 of a proposal to establish a policy for AAP in the UC/ED.
- Mean wait time to ordered analgesia would be less than two hours from registration.
- Mean wait time to the administration of analgesia would be less than two hours from registration.
- Pain levels would be documented on an hourly basis by the nursing staff at 100% of visits.
- Providers would use computerized order entry for 100% of analgesia orders.

Setting and Population

The population for this study consisted of 150 adult male and female patients who presented to MCHS-RC's UC/ED with AAP. One hundred patients presented before an educational interventional, and 50 patients presented post-educational intervention. The number of post educational intervention patients was decreased due to an outbreak of Norovirus, which was an acknowledged limitation of this project. The Norovirus outbreak began at the time the post-educational data was to be collected. Patients with Norovirus presented to the ED with

symptoms of AAP that met the criteria of the study. To maintain the integrity of the data, only those patients diagnosed with AAP and not gastroenteritis were selected for chart review. Adult patients were defined as patients between the ages of 18 to 65. For purposes of this study, AAP was defined by subjective history, peritoneal signs, and provider exam. Patients excluded were those who presented with a current pregnancy or history of abdominal trauma, or allergies to analgesics.

The setting was MCHS-RC's UC/ED. When the study began, MCHS-RC was known as Red Cedar Medical Center. Mayo Clinic Health System went through an organizational redesign in regionalizing the affiliated clinics and hospitals. For purposes of the project paper, the facility was referred to as MCHS-RC. MCHS-RC had provided care for the city of Menomonie, Wisconsin and the surrounding communities for 40 years. In 1996 the hospital and clinic became part of the Mayo Health System (MCHC-RD, 2011). MCHS-RC's ED is a state-certified Level IV trauma center in the northwest region. A regional ED and trauma committee was recently formed to standardized emergency care in the region. The regional ED trauma committee grew from the Regional Trauma Advisory Council (RTAC). The RTAC was an organized group of healthcare entities and other concerned individuals who had an interest in organizing and improving trauma care within our region. In 2009, MCHS-RC's ED treated over 9,000 patients.

Implementation

Background. MCHS-RC (2012) had a vision of unparalleled health care. Their quality benchmarks for pain management, based on pre-study Press Ganey results, indicated pain control was lower than the mean in three of seven quarters beginning in 2009. The pre-study Press Ganey results demonstrated below are a measure of patient pain satisfaction by year and quarter.

Figure 1 Press Ganey (2010) results were based on the question, "How well was pain controlled?" The blue dotted line indicates MCHS-RC results. The red solid line indicates the mean results among facilities with similar characteristics. The quarterly goal was to improve pain management as evidenced by 70% of patients receiving analgesia.

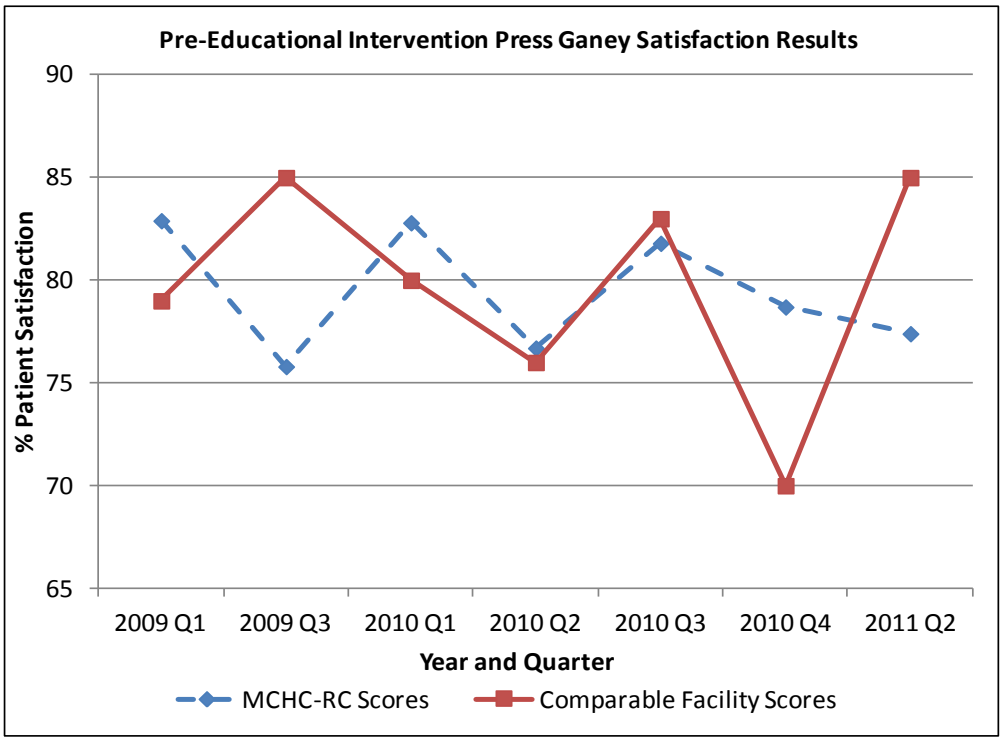

Figure 1. Press Ganey quarterly perceived pain results.

Design and Data Collection

Based on these pre-project Press Ganey scores, a provider on the UC/ED quality committee recommended developing an evidence-based policy for pain management in the UC/ED, educating nurses and providers on appropriate and safe AAP management, and researching the outcomes of the integrated policy. The goal was to improve pain management as

evidenced by decreased wait times to the ordering and administration of analgesia and an increased percentage of patients receiving analgesia. Measurements of pain assessment, wait time to analgesia, ordering of analgesics, and analysis of post-analgesia pain were obtained by the Assistant UC/ED Nurse Supervisor (ANS). The ANS followed a chart audit template (see Appendix A) for data extraction from 100 charts pre- and 50 charts post-educational intervention on the safe use of analgesia for patients who presented with AAP. The pre-educational intervention data were collected September 2011, and the post-educational intervention data were collected January 30, 2012 – March 18, 2012.

Pre-project, Press Ganey survey results were reviewed monthly by the UC/ED quality committee. Suboptimal Press Ganey satisfaction scores were the trigger for this project; thus, monthly patient satisfaction scores were measured by comparing previous Press Ganey scores with scores after the educational intervention was implemented. The results were posted in the UC/ED break room for staff edification. Of note, MCHS elected to change patient satisfaction surveyors to Avatar beginning the second quarter of 2012.

The EMTALA recognized pain as an emergent condition. Thus, for this project, the initial assessment included a pain assessment as an EMTALA requirement. Unless the patient was brought in by a pre-hospital service, patients presenting to the UC/ED were assessed by a triage nurse. There were two perceptions of the patient's pain at each step of the process: the patient's pain perception and the assessor's perception of the patient's pain. Once the patient was placed in a room, the ED nurse assigned to the patient continued to monitor the patient's pain per facility protocol. Vital signs, including pain level, were to be taken every hour. The provider also reassessed the patients' pain. Through clinical decision making, the provider either ordered or did not order analgesia. Ideally, this decision was made in collaboration with the

patient and was based on the patient's need. The nurses and providers continued to monitor the patient's pain until discharge or admission.

Design. This project was a quality improvement project designed to improve AAP management. The study design was quasi-experimental based on the nominal comparison of two patient groups: (a) acute abdominal pain patients receiving ordered analgesia before an education intervention, and (b) AAP patients who received ordered analgesia after an education intervention. One-sample *t* tests were used to measure the effects of an educational intervention on the outcomes of wait time to the ordering and the administration of analgesia. Measures were attained at baseline and again one month post-educational intervention. Wait time to the ordering of analgesia was operationalized as the measurement in minutes from the time the patient registered until analgesia was ordered, as documented by CPOE in the EHR. Wait time to the administration of analgesia was operationalized as the measurement in minutes from the time the patient registered until analgesia was administered, as documented by the time logged into the care mobile system. Improved AAP management was measured by the increase in the percentage of patients who received analgesia post-educational intervention compared to the percentage of patients who received analgesia pre-educational intervention. The educational intervention consisted of a Lunch and Learn for the UC/ED staff. Those staff members who were unable to attend received one-to-one education on the key points of the study (see Appendices B, C, D, E, & F).

Data collection. The data collection process consisted of a pre-educational intervention chart review, an educational intervention, and a post-educational intervention chart review. The chart review components included registration time, triage time, triage pain score, time the provider ordered analgesia, time the nurse administered analgesia, time of first post-analgesia

pain assessment, post-analgesia pain score, time of second post-analgesia pain assessment, and second post analgesia score (see Appendix A). The UC/ED ANS received education regarding the project proposal and purpose. Using the template created, the UC/ED ANS collected the data requested. The information was kept in the locked office of the UC/ED nurse manager and ANS.

Variables such as severity of pain, patient requests, staff experience, staff caseload, and time of patient registration influenced the timing of analgesia administration (Tait et al., 1999). Thus, outcomes in this study included wait time until provider ordered analgesia, time analgesia was administered by the nurse, and measurement of post-analgesia effect. Effective analgesia for this study was a pain score of 5 or less. This definition of effective pain management was discussed with the patient prior to the administration of analgesia.

The review of patients' wait times to analgesia, analgesia ordered, and follow-up pain assessment was completed with a chart review of 100 adult patients who presented with AAP pre- and 50 patients post-educational Lunch and Learn session. Content for the educational intervention was based on a literature review of the most current evidence-based care criteria for AAP (see Appendix B).

The Lunch and Learn was an hour-long session held on November 14, 2011. The UC/ED staff who attended the educational session received handouts and a PowerPoint presentation regarding research-supported pain management criteria that demonstrated analgesia did not delay or influence the accuracy of an AAP diagnosis. The intervention also discussed barriers to the ordering and administration of analgesia. Attendance included four nurses and two NPs, one PA, and five physicians. Those individuals who were unable to attend were given a one-to-one review of the key points and algorithm of the study (see Appendices D and E). Nursing had

several educational sessions related to pain assessment including patient quality indicators, triaging, and scripting of pain assessment (see Appendix F).

The quality committee for the UC/ED met monthly. Several meetings focused on patient satisfaction and methods of impacting the quality indicators of concern. Nursing focused on pain assessment and scripting communications about AAP management plans with patients. The quality department made a template for the questions pertinent to the study for easier data entry (see Appendix A). Information technology (IT) staff reviewed possible cues or pathways to promote better documentation of pain management. Proposed EHR adaptations were not approved due to challenges in implementation. A pain care plan was developed and introduced into the EHR.

According to the Agency for Healthcare Research and Quality (AHRQ, 2012b), pain was the most feared component of ill health and the most common reason for seeking health care. MCHS-RC's UC/ED policy recognized pain as the fifth vital sign. The pain assessment tool used by the UC/ED staff was the NRS. The most often used and easiest method of pain assessment was the NRS (Dewaters, Popovich, & Faut-Callahan, 2003). The patients were instructed by the triage nurse to rate their pain intensity using the NRS. The numbers ranged from 0-10. The descriptors for the ratings ranged from 0 (meaning no pain) to 10 (being the worst pain imaginable). NRS had been shown to be more reliable than the visual rating scale (VRS) in patients with a lower educational level (Ferraz et al., 1990).

The patients were triaged using the Emergency Severity Index (ESI). The ESI was a five-level tool for use in ED triage ranging from 1 (most urgent) to 5 (minimal resources and urgency) (AHRQ, 2012a). AAP, based on ESI criteria, was generally triaged at a level three due

to the need for resources of laboratory, radiology, and medication administration. Level three patients would be roomed before patients of lesser acuity.

Proposed Budget and Timeline

MCHS-RC resources were utilized for the study, and the facility did not require additional funding for the project. As the project offered insight on methods to improve pain management, there were acknowledged benefits to the patients and the facility.

A proposed project time-line was developed (see Appendix G). The quality committee met on a monthly basis to establish and review the phases of the UC/ED AAP management project (see Appendices H and I). The pre-educational intervention data analysis offered information regarding the need to improve the post-administration pain re-assessment process, develop scripting for triage nurse pain assessments, and recognize the disparity in the time between patient registration and analgesia orders in several patients with outlier results (see Appendix F). There were several delays in obtaining the initial data due to the need for clarification of data extrapolation criteria.

The post-educational intervention was scheduled once the initial data were collected. Following the Lunch and Learn, one-to-one educational sessions were held with each provider who spent the majority of their practice in the UC/ED department (see Appendices B and C). The one-to-one training of five PAs, two NPs, and six physicians took place over a two-month period (see Appendices D and E). When one-on-one training was completed, the ANS was instructed to begin the post-educational intervention data collection on January 15, 2012.

Summary

The project's goals and objectives were identified and discussed. The project implementation process, which was developed with the support of the UC/ED quality committee,

was described in detail. The quasi-experimental design and data collection process were discussed. NAS pain scores were obtained at triage and post-administration of analgesia. A Lunch and Learn educational intervention was given to UC/ED staff. The UC/ED staff unable to attend received one-to-one education on the key information from the Lunch and Learn.

Chapter IV: Project Findings

Introduction

This clinical project began with a needs assessment by the UC/ED quality care committee that resulted in a goal to improve patient pain management. The UC/ED quality committee and service collaborative were supportive of an applied research project to improve wait times and pain management. Patients presenting with AAP were the most common UC/ED pain population. Thus, a chart audit of 100 UC/ED patients with AAP was performed pre-educational intervention to determine baseline wait times to the ordering and administration of analgesia. Effective pain management was measured comparing the percentage of patients receiving ordered analgesia pre-educational intervention to the percentage of patients receiving ordered analgesia post-education. The educational intervention was done in a Lunch and Learn session on November 14, 2011 for the ED/UC staff. Two months later a repeat chart audit of 50 charts of patients with AAP documented post-intervention wait times to ordered and administered analgesia. Pain management was effective if the pain level was 5 or less at discharge and ineffective if the pain level was 6 or greater at discharge. A policy for AAP was proposed for the UC/ED.

Data Analysis

Pre- and post-intervention data were compared using the statistical methods of a Chi-square analysis and an Independent T-Test. The Chi-square analysis compared the group of AAP patients who received ordered analgesia pre-educational intervention with the group of AAP patients who received ordered analgesia post-educational intervention. The independent T-test compared the pre-educational intervention wait times to ordered and administered analgesia

with post-educational intervention wait times to ordered and administered analgesia. The time from registration to ordered and administered analgesia was measured in minutes. A statistician from University of Wisconsin-Stout was employed to review the data sets and recommend analysis options.

Results

Data from charts of 100 AAP patients who presented to MCHS-RC pre-educational intervention were compared to data from charts of 50 AAP patients post-educational intervention. Four pre-educational intervention patients were removed from the study because analgesia was ordered but not administered. One post-educational intervention patient's results were excluded because the patient left the facility against medical advice after the initial triage pain assessment. A Chi-square analysis was conducted to compare AAP patients' pre- and post-educational intervention results among those who received analgesia and those who did not receive analgesia (see Tables 1 and 2). Statistical results indicated there was a significant difference between the group of patients who received analgesia post-educational intervention compared to the group of patients who received analgesia pre-educational intervention ($p=.047$ *or* $< .05$, $N = 145$). The percentage of patients who received analgesia post-educational intervention increased by more than 10% compared to the pre-educational intervention group. The results proved to be significant for improved pain management as demonstrated by an increased percentage of patients receiving ordered analgesia.

Table 1

Chi-square Test Results of Education and Analgesia

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	3.959	1	.047		
Continuity Correction	3.287	1	.070		
Likelihood Ratio	4.025	1	.045		
Fisher's Exact Test				.053	.034
Linear-by-Linear Association	3.932	1	.047		
N of Valid Cases	145				

Table 2

Education and Analgesia Cross-tabulation

			Analgesia		Total
			yes	no	
Education	yes	Count	33	16	49
		Expected Count	27.4	21.6	49.0
		% within Education	67.3%	32.7%	100.0%
	no	Count	48	48	96
		Expected Count	53.6	42.4	96.0
		% within Education	50.0%	50.0%	100.0%
Total		Count	81	64	145
		Expected Count	81.0	64.0	145.0
		% within Education	55.9%	44.1%	100.0%

Wait times for ordered and administered analgesia were compared between the pre-educational intervention and post-educational intervention groups. Analgesia was ordered and administered for 46 of the 100 (46%) pre-educational intervention AAP patients. Analgesia was

ordered and administered for 33 of the 50 (66%) post-educational intervention AAP patients. Independent *t*-tests were performed comparing pre- and post-educational intervention wait times to ordered or administered analgesia. The mean wait time from registration to ordered analgesia was not significantly improved post-intervention ($p = .89$ *or* $> .05$, $N = 79$) (see Tables 3 and 4). The mean wait time to ordered analgesia increased from 64 minutes in the pre-educational intervention group ($M = 64.28$, $SD = 51.97$) to 66 minutes in the post-educational intervention group ($M = 65.97$, $SD = 49.59$).

Table 3

Pre- and Post-education and Ordered Analgesia Results

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Order	Equal variances assumed	.002	.961	.145	77	.885	1.68709	11.63408	-21.47932	24.85349
	Equal variances not assumed			.146	70.966	.884	1.68709	11.54351	-21.33022	24.70439

Table 4

Pre- and Post-education and Ordered Analgesia Mean Wait Times

	Education	N	Mean	Std. Deviation	Std. Error Mean
Order	Yes	33	65.9697	49.59239	8.63293
	No	46	64.2826	51.97464	7.66324

The mean wait time from registration to administered analgesia was not significantly improved post-intervention ($p = .81$ *or* $> .05$, N = 79) (see Tables 5 and 6). The mean wait time to administered analgesia increased from 86 minutes in the pre-educational intervention group ($M = 85.76$, SD = 63.03) to 89 minutes in the post-educational intervention group ($M = 88.88$, SD = 46.90).

Table 5

Pre- and Post-education and Administered Analgesia Results

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Order	Equal variances assumed	1.243	.268	.240	77	.811	3.11792	12.97623	-22.72107	28.95690
	Equal variances not assumed			.252	76.873	.802	3.11792	12.36936	-21.51328	27.74911

Table 6

Pre- and Post-education and Administered Analgesia Mean Wait Times

	Education	N	Mean	Std. Deviation	Std. Error Mean
Given	Yes	33	88.8788	46.89667	8.16366
	No	46	85.7609	63.02669	9.29278

The findings related to expected outcomes demonstrated both positive results and learning opportunities. Table 7 compares pre- and post-educational intervention data. Pre-education, analgesia was ordered for 52 patients, and 4 of those patients did not receive the

ordered analgesia. Of the 48 patients who received analgesia, 2 received the medication before the provider ordered it. Of the 100 pre-educational intervention charts reviewed, 24 patients (50%) had a documented pain level of 5 or less at first reassessment. At the time of discharge, 28% of the patients' pain assessments were considered therapeutic with a value of 5 or less. The remaining 72% were discharged with a mean pain level of 7.7.

Table 7

Pre- and Post-educational Intervention Data Comparisons

Criteria	Pre-	Post-
Percentage of all patients in which analgesia was ordered by provider	52%	66%
Percentage of all patients whose pain <=5 at discharge	31%	40%
Average time from analgesia ordered to analgesia given	36 min.	27 min.
Percentage of all patients receiving a pain assessment at triage	100%	100%
Percentage of all patients with one post analgesia pain re-assessment	31%	40%
Percentage of all patients with post analgesia 2nd pain re-assessment	30%	24%

Systems Changes

In this project, system changes involved the areas of nursing, research, information technology, and evidence-based care. Nursing utilized scripting and assessments focused on effective pain management. UC/ED nurse management held team meetings discussing triage criteria and pain assessments. During the project implementation, nursing management scripted pain questions for the triage nursing staff. A post-scripting survey was created and generated by the UC/ED service excellence committee regarding patient pain assessment. The three-question survey asked patients:

1. Did the nurse assess your level of pain?
2. Did the nurse discuss pain control expectations?
3. Did you feel the nurse was concerned about your comfort?

Figures 2 through 4 show the results. Of the 43 patients surveyed, 91% of patients affirmed their pain was assessed, 70% responded their nurse did not discuss pain expectations, and 79% responded the nurse was concerned about their comfort.

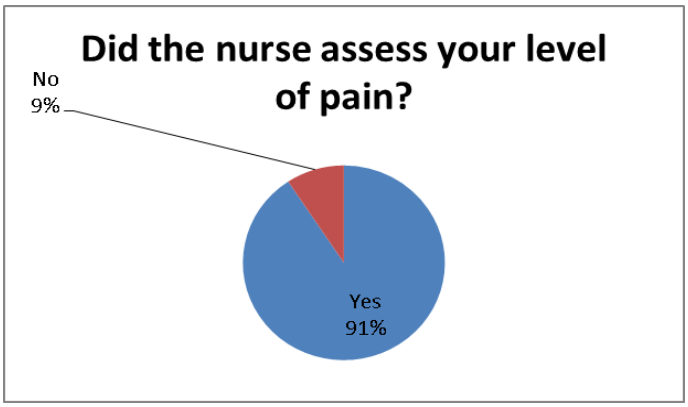

Figure 2. Triage nurse pain assessment survey results.

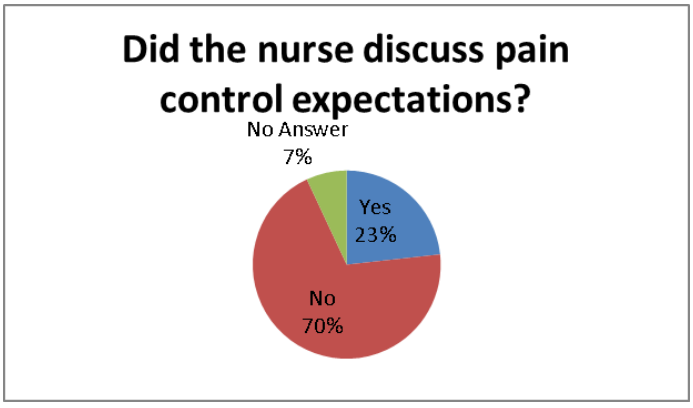

Figure 3. Triage nurse pain discussion results.

Figure 4. Triage nurse pain concern results.

Post-educational intervention pain assessments appeared to decrease even though scripting and educational interventions were communicated to all staff. Through the research process, the assistant nurse manager discovered that there were two areas outside of the EHR where nursing had documented pain re-assessments. The nurses were not aware that the two other systems did not communicate with the EHR; rather, data were downloaded into the main system. Now that nursing management has learned about the informatics communication barrier, an information technology work order has been requested to evaluate the system and develop a process for immediate access to documented information. Research regarding quality measures for pain and wait time remain the focus of the UC/ED quality committee, and an abdominal pain care set has been added to the EHR.

Summary

Project results showed a significant improvement in pain management as demonstrated by the increased percentage of patients who received analgesia post-educational intervention compared to the pre-educational intervention group. Unfortunately, post-educational

intervention data did not show improvements in wait times to analgesia orders and administration compared to pre-educational intervention data. Initial nursing assessments of pain at triage were completed 100% of the time, which met the initial assessment objective. To date, the nursing staff has continued to work on effective processes to document, store, and reliably access pain reassessment data. An AAP pain care set has been included in the EHR at MCHS-RC.

Chapter V: Project Summary

Wait times to ordering and administration of analgesia to AAP patients in the UC/ED were not significantly different from baseline after an educational intervention was provided to UC/ED staff. The educational intervention was not successful in decreasing wait times to the ordering and administering of analgesia to AAP patients in the UC/ED. However, the percentage of AAP patients receiving analgesia increased post-educational intervention. In this respect, the educational intervention offered to UC/ED staff *was* successful. Nursing pain assessments post-analgesia appeared to decrease post-educational intervention in the EHR. However, a confounding factor was the discovery by the UC/ED nurse manager and ANS that pain assessments were, in fact, documented in three separate areas. In addition, post-intervention data included several outliers, which influenced the results on wait time until analgesia was ordered and administered. The few wait times that were significantly longer may represent one provider. In a small UC/ED with small numbers of staff, the outlying practices of even a single provider can skew the aggregate data.

Recommendations for System Change

Results demonstrate the need to continue to review components of the pain management process for AAP patients in the UC/ED. Although wait times to analgesia ordering and administration have improved, the marginal improvements were not statistically significant; there is obvious room for more improvement. Areas for improvement would include documenting the clinical decision making in those cases where analgesia was not ordered, including nursing reassessment and documentation thereof. Educating and involving patients about their own responsibility in pain assessment and communication can serve to keep patients

involved in their care decisions. Facility involvement in setting guidelines and offering resources for improved workflow will streamline processes and improve access to care. Nursing must establish a best practice method of documenting re-assessment pain scores.

Patient responsibility. Patients play a key role in successful pain control. To help providers and nurses better understand patients' reality, patients must better communicate their actual perception of pain and need for analgesia. Patients need to be encouraged to communicate their values and beliefs about the etiology and meaning of their pain. Patients' pain narratives will be more useful if the providers are attentive and nonjudgmental listeners. Patients may not always assert themselves and advocate for their needs; but providers who listen, believe, and remain present can supplement and support patient self-advocacy.

Provider responsibility. Physicians and members of the healing professions have a moral obligation to prevent and relieve human suffering (Cassell, 1982). Moral claims arise from our relationship with others who are vulnerable to our choices and actions (Walker, 2007). Provider responsibility requires taking the important step of providing analgesia based on reported pain versus perceived pain. This step comes from a process of acknowledging personal perceptions, beliefs, and prejudices that act as barriers to ordering analgesia and overcoming them with an educational and evidence-based medical decision.

Educating providers on pain management should begin during the first year of their educational program. Selbst and Clark (1990) noted that providers received minimal education on pain management. In a retrospective study, Jones (1999) later reviewed patient's VAS pain scores before and after the facility's four-hour pain management educational program for residents and found that the percentage of patients who experienced pain relief within 30 minutes increased from 65% to 92% after the educational program.

Future studies should include a pre- and post-study survey of providers and surgeons with respect to their perception of the effects of analgesia on assessment and diagnosis of patients presenting with AAP. Even a small number of outliers can skew pre- and post-educational intervention data, and results may be indicative of one or two provider's practice beliefs.

Nursing responsibility. Nursing brings the gifts of caring, responsibility, and compassion to the management of a patient's pain and suffering. Nursing care is not just clinical and technological. Nursing care includes self-awareness and centering, presence, reciprocal communication, and advocacy. Nursing recognizes the need for continuous education and training to build on skills, abilities, and knowledge. Successful pain management may enhance nurses' autonomy, sense of empowerment, and job satisfaction, thus contributing to nurses' overall well-being (Blondal & Halldorsdottir, 2009).

Good's (1998) theory of acute pain management focused on attentive pain management, multimodal intervention, and patient participation. Attentive pain management would be demonstrated by consistent documentation of pain levels. Although more follow-up pain assessments may have occurred in this study than were reflected by the data, documentation did not exist to support it. Multimodal intervention for alternative pain management techniques could include cool or warm compresses, guided imagery, distraction, IV hydration, massage, and therapeutic touch. In this project, alternative therapies might have been offered but documentation for it could not be found. Documentation of therapies offered and results obtained may help with the management of future pain patients. A cue care set of alternative pain management methods would offer an efficient option for documenting alternative pain treatments and outcomes. Patient participation was incorporated by providing education, encouraging communication, and partnering with patients in setting acceptable pain levels.

Communicating one's recognition of patients' pain can make all the difference in their perception of pain; and it serves to establish a trusting nurse-client relationship.

Compassionate care contributes to establishing a patient's trust. Doutrich, Wros, and Izumi (2001) compared the ethical concerns of Japanese and American nurses in their care of a suffering patient. Narrative interviews of 18 Japanese nurse educators were compared to previously taped narratives by U.S. nurses. The narratives were reviewed for common themes. The common concerns for their patients included relief of patient suffering, regard for personhood, family needs, the preservation of dignity, and the provision of non-discriminatory treatment. Walker (2007) encouraged using theory and intuition to make moral judgments that are compellingly right.

In order to find more efficient methods of relieving a patient's suffering, models of pre-ordered analgesia have been trialed. Pre-order sets are an effective means of improving wait time until analgesia. Kelly, Brumby, and Barnes (2005) performed a retrospective chart review to study both nurse and non-nurse provider wait times to analgesia for patients receiving intravenous (IV) pain medication per pre-order protocol. Study participants who presented with renal or biliary colic had an average wait time of 31 minutes until the nurse initiated opioid analgesia. The non-nurse provider group waited 57 minutes, on average. To a patient in pain, the 26-minute difference was emotionally significant.

Nursing assessments can document effective and ineffective pain management. Pain measurements are necessary to communicate the patient's pain. Rieman and Gordon (2007) conducted a multicenter study on the knowledge and attitudes of nurses with respect to pain management. One of the nursing strengths identified in the results centered on the concept of caring and the nurse's concern with the patient's perception of pain and the nurse's desire to

relieve the pain. Edgar, Sloan, and Todd (2003) showed that nurses documented pain assessments 2.2 times more often than physicians did after treatment.

Nursing, as a profession, is committed to providing comfort and preventing suffering (American Nurses Association, 2001). The mission of the American Society for Pain Management Nursing (2007) is to promote best nursing practice with respect to optimal nursing care for people affected by pain. Best nursing practice is demonstrated by education, standards, advocacy, and research (American Society for Pain Management Nursing, 2007).

Facility responsibility. Reviewing barriers to effective analgesia, facility contributions include educational updates, training for available technology, supported policies and guidelines, manageable workloads, team building exercises, providing designated interruption-free zones, and establishing pre-order care sets for appropriate patients. Facilities need to encourage individual stakeholders to demonstrate moral sensitivity in respecting and valuing the patient's interests and beliefs. The effective use of pain scales and EMRs are beneficial for improving analgesia use in the ED. Standard pain assessment has proven to be useful (Kaplan, Sison, & Platt, 2008). A study by Nelson et al. (2004) demonstrated an increase in analgesia use when a standard pain assessment protocol was initiated. A pre-implementation and post-implementation chart review documented an11% improvement in use of analgesia post-implementation.

To minimize the number of interruptions that nurses and providers experience in the ED, interruption-free zones may be created by simply making squares with red tape on the floor. Areas to be considered would include the provider's computer where orders are initiated and the computer which activates the medication dispensing system. Signage is also encouraged along with education about interruption-free compliance. Each facility may choose to expand on this process by having designated nursing and provider work stations that are also interruption-free

zones. Over the course of this study, a care set was built to improve efficiency regarding assessment, management, and treatment of patients presenting with AAP. Establishing processes and guidelines offers patients continued quality care during times of change.

In recognition of problems with patient flow and access to care, MCHS-RC will be breaking ground in May to expand the UC/ED to more than double the available space. As wait times are often related to room availability, the facility recognizes the need for expansion, which will offer an opportunity for follow-up performance improvement projects.

Implications for Maintaining Change

The process for maintaining change will include a six-month post-intervention chart audit of 20 charts along with a recommendation to record provider initials next to any outlying data. The purpose of capturing these data is to offer an opportunity for one-to-one education to outlying practitioners on evidence-based pain management and the relief of patient suffering.

The assistant UC/ED nurse supervisor will follow the same criteria in pulling data from 20 charts of patients who presented to UC/ED with AAP. The data will be shared by transparent reporting on the data board in the UC/ED break room. Nursing will meet monthly to review positive patient-generated feedback from Avatar reports.

The UC/ED quality group recommended team training and role playing activities for team building prior to construction. Patient educational material will be developed by the marketing department to help patients successfully navigate clinic visits.

Plan for Dissemination of Results

Information serves best when it is shared to educate others. A follow-up Lunch and Learn will be offered to review the findings of this study and to discuss the proposed recommendations for improvement and change. A report will be given at the monthly UC/ED

quality meeting. The data will be placed on the communication board in the UC/ED break room. A copy of the project paper will be presented to the facility as a thank you for their support.

Summary

Project results demonstrated that staff education and process development improved the quality of care to patients who presented to UC/ED with AAP. Improved pain management was demonstrated by an increased percentage of AAP patients receiving analgesia post-educational intervention compared to the pre-intervention group. Differences between the pre- and post-intervention groups were not statistically significant for the measures of wait time to ordered and administered analgesia. In terms of risk and potential outcome improvement, better pain management could save millions of healthcare dollars; for example, the average abdominal pain diagnosis took 1.32 visits and cost $123.36, with 51% of cases resulting in an unspecific diagnosis (Dominitz, Sekijima, & Watts, 2000). Continued improvements in assessment and management of acute pain will be needed in order to meet the goal of quality patient care.

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Appendix A

Data Collection Template

Data Collection Template

Abdominal Pain Data Collection Form

*Inclusions - adults between 18-65 years of age w/acute abdominal pain in UC or ER, w/pain level of 8-10 on a 1-10 scale

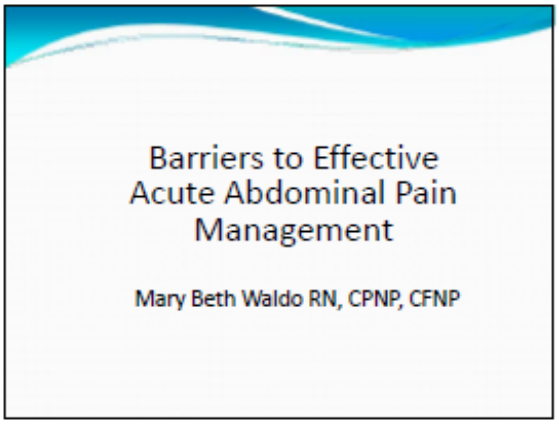
*Exclusions - pregancy, abdominal trauma, allergic to analgesics (codine or morphine), intollerances are not excluded

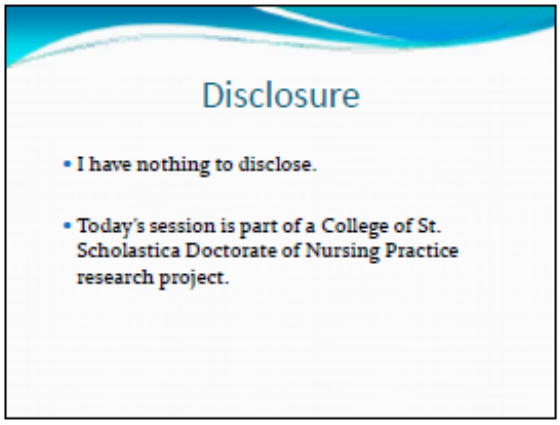
Patient	Registration Time	Triag Time	Initial Pain Assessment (1-10)	Provider ordering Pain Med Time	Nurse giving Pain Med Time	Post Pain 1 Assessment (1-10)	Post Pain 1 Assessment Time	Post Pain 2 Assessment (1-10) (if applicable)	Post Pain 2 Assessment Time (if applicable)

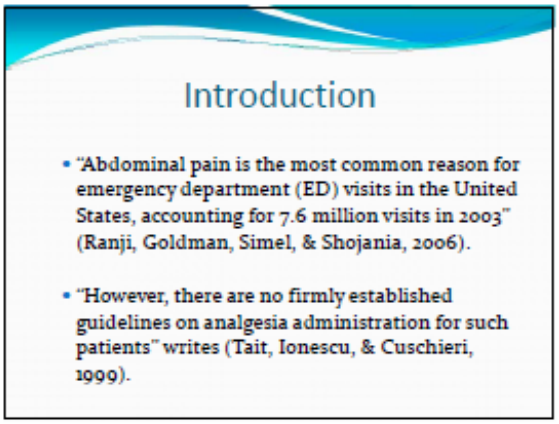
Appendix B

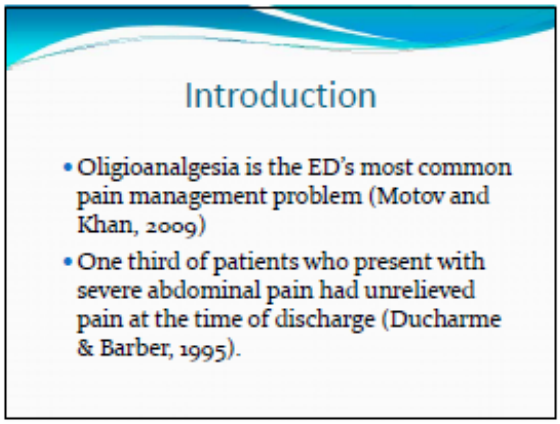
AAP Educational Intervention Handout

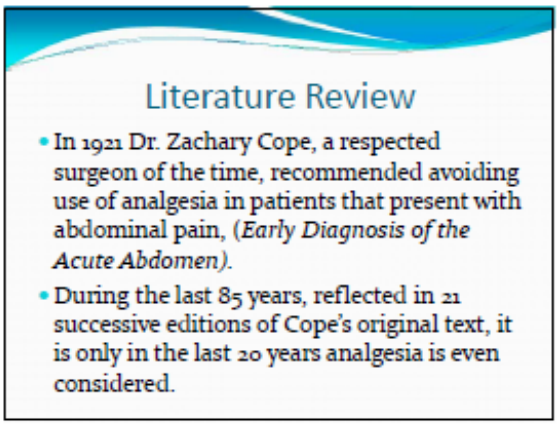
AAP Educational Intervention Handout

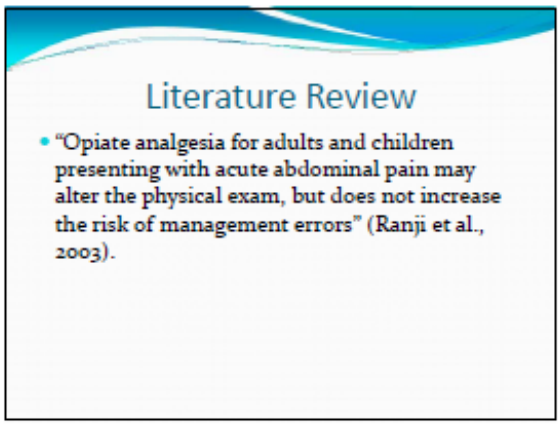












Literature Review

In an observational study by Guru and Dubinsky (2000) found nurses and physicians rated the patients pain lower than the patient's own rating.

- 68% of patients received analgesia
- 49% experienced no pain relief
- 50% of patients experiencing no pain relief were satisfied with their care

Literature Review

Todd, Sloan, Chen, Eder and Wamstad (2003):

- Cross sectional study of 525 patients with high levels of abdominal pain presenting to two university based Eds.
- 50% received ordered analgesia
- 48% continued to experience moderate to severe pain
- Patients still reported satisfaction with their visit

Literature Review

Todd, et al. (2007) performed a chart review of 20 United States and Canadian Hospitals to evaluated ED pain management practices

- Stays of 90 minutes or longer, 60 % of patients received analgesia.
- 74% of patients were discharged in moderate to severe pain.

Question

- Will defining barriers that contribute to oligioanalgesia in the ED assist stakeholders in recognizing their role toward effective pain management?

Problem Statement

- Staff education in the evidenced based use of multimodal intervention, attentive pain management, and patient participation in the treatment of acute abdominal pain in the urgent care and emergency department will improve patient satisfaction regarding pain management and wait times.

Needs Assessment

- Mayo Clinic Health Systems-Red Cedar (MCHS-RC) Press Ganey results demonstrated patient perception of undertreated pain in 9 of the last 10 quarters.
- Press Ganey results for wait time, provider and nurse caring demeanor also key quality indicators for improvement

Joint Commission

- The hospital needs to assess and manage the patient's pain (The Joint Commission, 2009).
- Pain must be assessed and reassessed
- Management of pain – either treatment or referral

EMTALA

- Required to assess pain and determine if a critical conditions exists
- Stabilizing treatment
- Stabilize-to provide treatment necessary to insure no deterioration of condition is likely.

Purpose

- To improve the quality of care to patients that present to urgent care and emergency department with AAP as demonstrated by decreased wait times to analgesia and patient responses in the Press Ganey study indicating higher satisfaction regarding pain management.

Definitions

- Narcotic seekers- Patients that engage in inappropriate behaviors for the purpose of attaining and using narcotic medications
- Bless their hearts
- Opiophobia-provider fear or concern regarding the use of opioid analgesics

Provider Barriers

- Interrupted/distracting work flow
- Concerns regarding drug seeking behavior
- Altered perception regarding the patients pain
- Historical influence on use of analgesia (Cope)

Nursing Barriers

- Dependent upon the provider ordering analgesia
- Waiting for pharmacy approval
- Nursing education
- Nursing experience
- Collaborative relationships
- Workflow

Patient Barriers

- Patient health literacy
- Patient's ability to communicate
- Age, gender, cultural and social mores regarding expressing and managing pain
- Medication tolerance

Provider Responsibilities

- Preventing and relieving suffering
- Addressing reported instead of perceived pain
- Recognizing any personal barriers inhibiting the ordering of analgesia
- Documenting patient refusal of analgesia if offered

Nursing Responsibilities

- Remembering professional strengths of caring, responsibility and compassion
- Developing a care set for abdominal pain
- Assessing and re-assessing pain in timely manner
- Listening and advocating for the patient's needs

Patient's Responsibilities

- Communicating expectations for pain management
- Clearly communicating pain levels

Summary

- Addressing barriers to oligioanalgesia should improve pain management resulting in decreased wait times to analgesia and higher patient satisfaction.

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Appendix C

AAP Presentation Objectives

RCMC Grand Rounds 2545
Acute Abdominal Pain Management
Mary Beth Waldo, NP
November 14, 2011

Learning Objective(s)

- Recognize contributing factors to oligoanalgesia
- Review Joint Commission guidelines for pain management
- Recognize barriers to effective pain management

Credit Statement
College of Medicine, Mayo Clinic is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.
College of Medicine, Mayo Clinic, designates this live activity for a maximum of 1 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
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No relevant financial relationship(s) with industry:
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References to off-label usage(s) of pharmaceuticals or instruments in their presentations
None
Department Contacts: Please distribute this information to participants prior to the program. **Send a copy of this completed form** to the Mayo School of CME, Plummer 2-60. This form is available at http://mayoweb.mayo.edu/cme/ or by calling 6-6520.

Appendix D

Abdominal Pain Management Key Points

Abdominal Pain Management Key Points

Pre-education data has been pulled from 100 patient charts

- Pain is being undermanaged in the UC and ED
- Press Ganey results indicates patient dissatisfaction with pain last 3 of 7 quarters
- **Research supports that analgesia, usually morphine, does not inhibit diagnosis or adversely affect outcomes.**
- Pain management is one of Joint Commissions top 10 review issues

Suggestions

- Offer analgesia to appropriate patients with pain level greater than 8
- Make sure to document, "Analgesia was offered at time initial orders were launched; patient refused analgesia." This will address pain data by documentation of refusal.
- Nursing will document pain assessment consistently; including pain measurements q60 minutes post analgesia.
- Recognize any personal barriers inhibiting the ordering of analgesia.

Goals

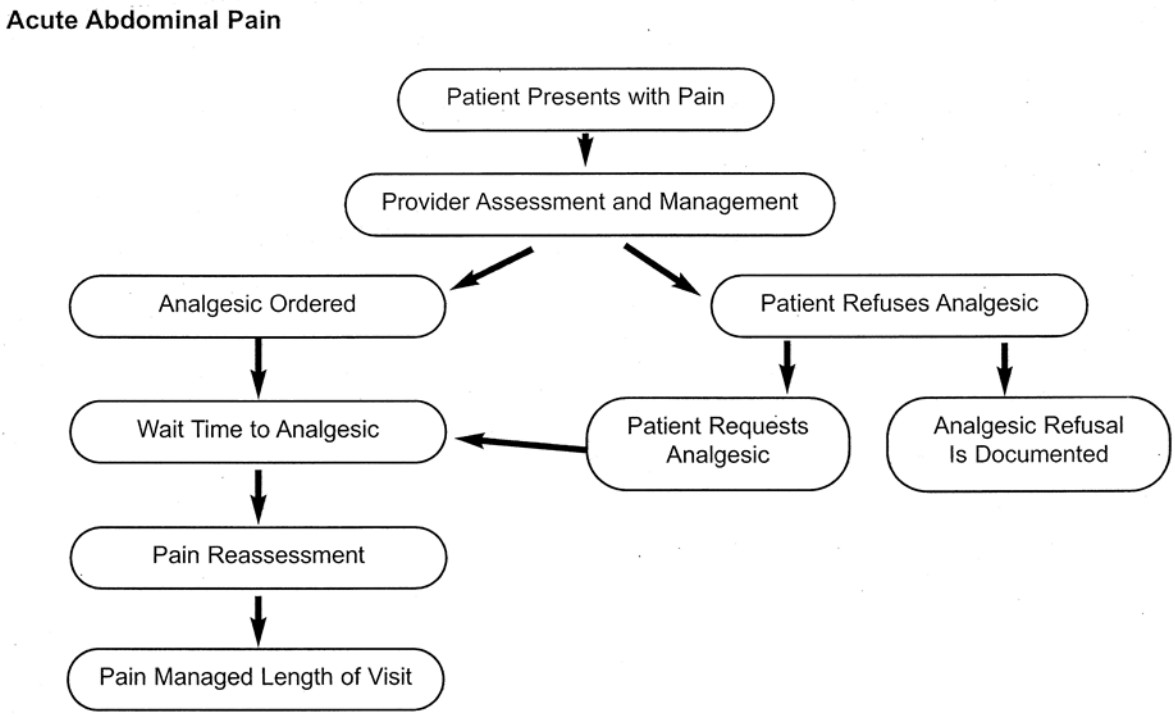
- Patient pain levels below 5 during visit and at discharge or transfer.
- Improved documentation regarding analgesia ordering, refusal, and maintenance.
- Decreased wait times to ordered and administered analgesia
- Improved patient satisfaction reflected in Press Ganey scores
- Nursing will document pain levels q 60 minutes post analgesia administration 100% of visits.

Data collection will begin January 15th, 2012.

Appendix E

Acute Abdominal Pain Algorithm

Acute Abdominal Pain Algorithm



Appendix F

Nurse Pain Assessment Scripting Guidelines

Nurse Pain Assessment Scripting Guidelines

Scripting

- It is important to us that you feel comfortable during your time here. Can you tell me what your pain level is? What thing can we do to make you more comfortable?
- I understand you are experiencing some pain. We really want to help you feel comfortable. What level of pain do you think you can comfortably tolerate.
- Pain is a challenging symptom. We want you to be as comfortable as possible, but may not be able to completely eliminate your pain. What is an acceptable level of pain for you? (Alternatives: What level of pain do you feel you can manage at home? Where would you like your pain to be when you leave here?)
- We understand you are experience some pain. The doctor will not be able to see you for about ____. What things can we do to make you more comfortable without medication?

Questions

- Are you experiencing pain right now?
- What is your level of pain?
- What do you feel is a manageable level of pain for you?
- What is the best way for us to help you manage your pain?
- What level of pain is acceptable to you?
- How can we work together to manage your pain?
- Aside from medications, what has worked for you in the past to help manage pain at home?

Tips

- Include the patient in a team approach.
- Take the time to understand their goals for pain.
- Explain how long it will take the therapies to work.
- Acknowledge their anxiety and discomfort.

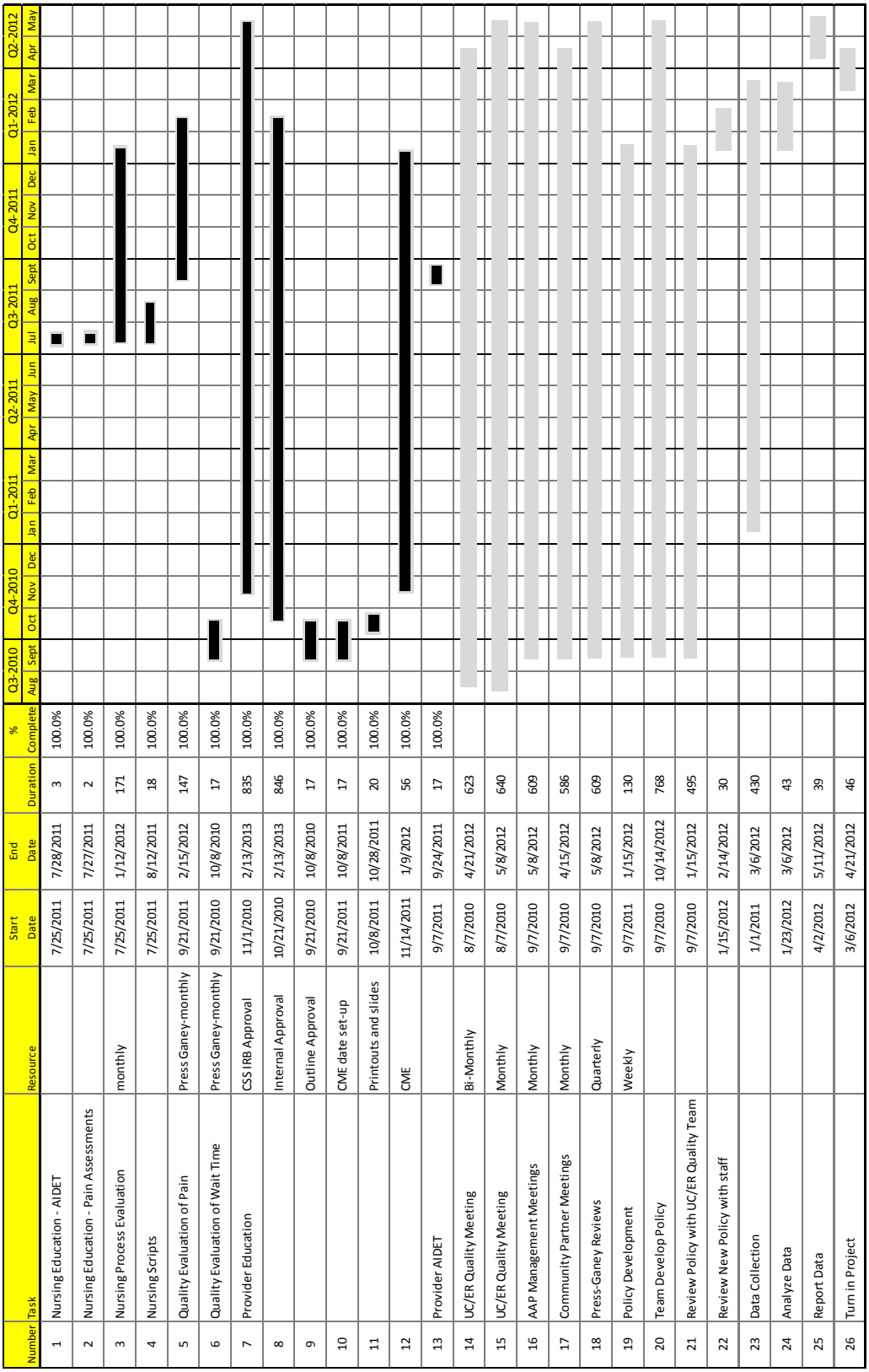
Medication Alternatives

- Warm blankets
- Pillows
- Ice packs
- Deep breathing techniques
- Visualization
- Meditation
- Comforting touch

Appendix G

Proposed Timeline for AAP Project

Proposed Timeline for AAP Project

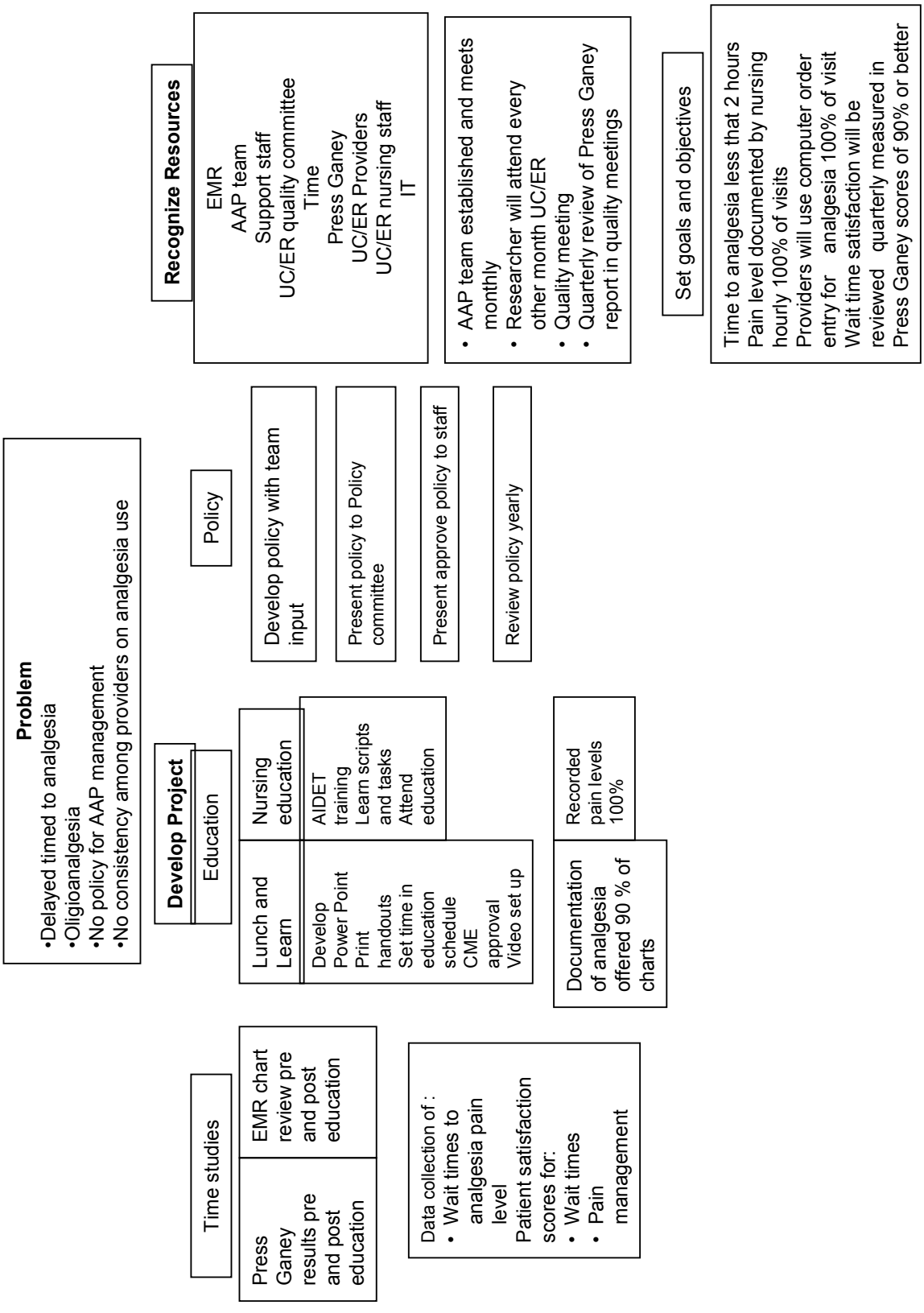


Number	Task	Resource	Start Date	End Date	Duration	% Complete
1	Nursing Education - AIDET		7/25/2011	7/28/2011	3	100.0%
2	Nursing Education - Pain Assessments		7/25/2011	7/27/2011	2	100.0%
3	Nursing Process Evaluation	monthly	7/25/2011	1/12/2012	171	100.0%
4	Nursing Scripts		7/25/2011	8/12/2011	18	100.0%
5	Quality Evaluation of Pain	Press Ganey-monthly	9/21/2011	2/15/2012	147	100.0%
6	Quality Evaluation of Wait Time	Press Ganey-monthly	9/21/2010	10/8/2010	17	100.0%
7	Provider Education	CSS IRB Approval	11/1/2010	2/13/2013	835	100.0%
8		Internal Approval	10/21/2010	2/13/2013	846	100.0%
9		Outline Approval	9/21/2010	10/8/2010	17	100.0%
10		CME date set-up	9/21/2011	10/8/2011	17	100.0%
11		Printouts and slides	10/8/2011	10/28/2011	20	100.0%
12		CME	11/14/2011	1/9/2012	56	100.0%
13	Provider AIDET		9/7/2011	9/24/2011	17	100.0%
14	UC/ER Quality Meeting	Bi-Monthly	8/7/2010	4/21/2012	623	
15	UC/ER Quality Meeting	Monthly	8/7/2010	5/8/2012	640	
16	AAP Management Meetings	Monthly	9/7/2010	5/8/2012	609	
17	Community Partner Meetings	Monthly	9/7/2010	4/15/2012	586	
18	Press-Ganey Reviews	Quarterly	9/7/2010	5/8/2012	609	
19	Policy Development	Weekly	9/7/2011	1/15/2012	130	
20	Team Develop Policy		9/7/2010	10/14/2012	768	
21	Review Policy with UC/ER Quality Team		9/7/2010	1/15/2012	495	
22	Review New Policy with staff		1/15/2012	2/14/2012	30	
23	Data Collection		1/1/2011	3/6/2012	430	
24	Analyze Data		1/23/2012	3/6/2012	43	
25	Report Data		4/2/2012	5/11/2012	39	
26	Turn in Project		3/6/2012	4/21/2012	46	

Appendix H

Logic Statement for AAP Project

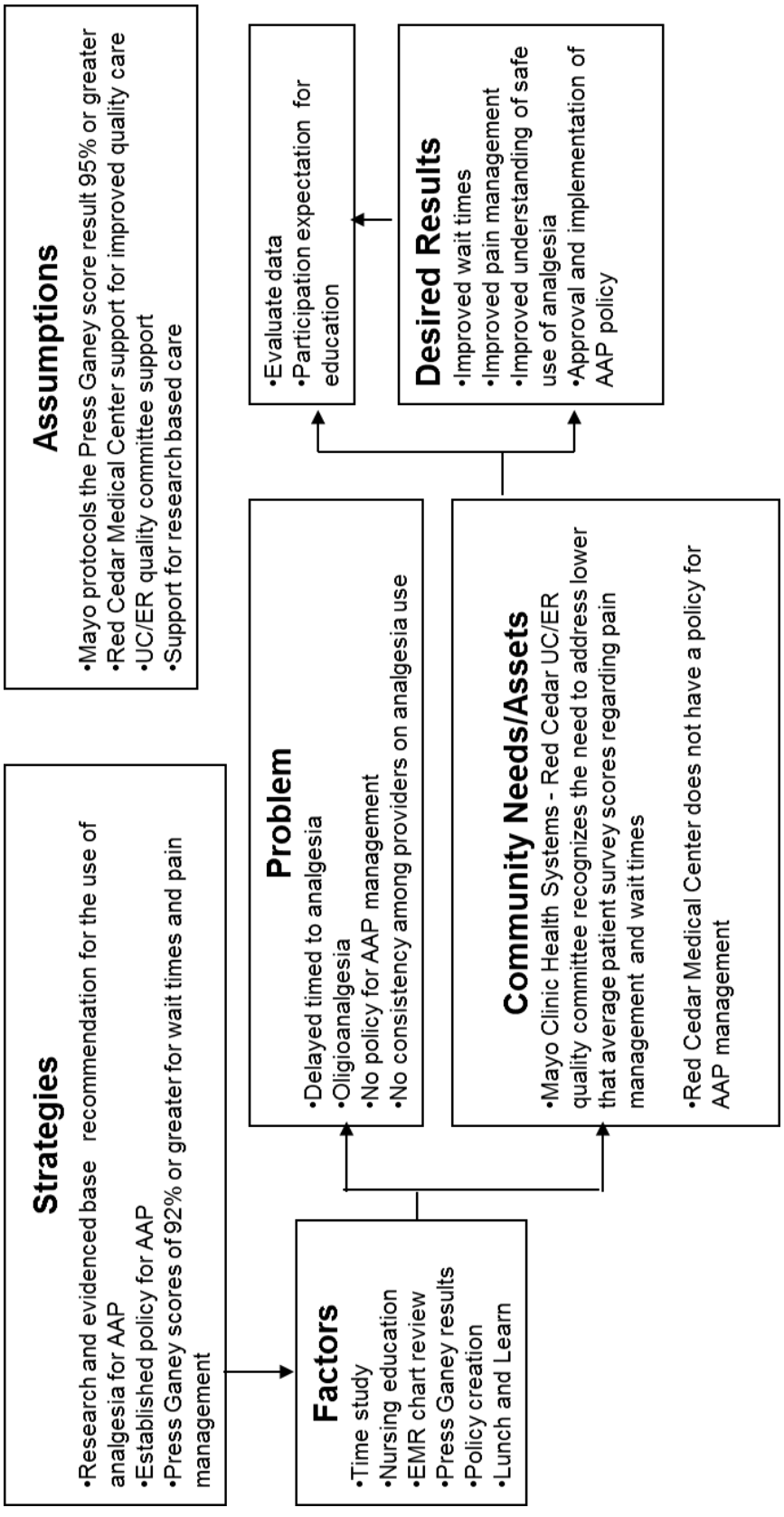
Logic Statement for AAP Project



Appendix I

Work Breakdown Structure for AAP Project

Work Breakdown Structure for AAP Project



Appendix J

The College of St. Scholastica Institutional Review Board Approval

THE COLLEGE OF ST. SCHOLASTICA
School of Nursing
Institutional Review Board

Date: 11/3/10
Dr. Catherine Miller, SON IRB Chair
Sr. Kathleen Niska, PhD.
Dr. Mary Tanner
Clinical Investigator: Mary Beth Waldo; DNP Graduate Nursing Student

Clinical Project/ Study Title: Acute Abdominal Pain Management: Educational Effect on Time to Analgesia

Dear Ms. Waldo:

The College of St Scholastica School of Nursing Institutional Review Board for the Protection of Human Subjects has reviewed your proposal request and determined that your study qualifies as exempt from full IRB review under federal guidelines 45 CFR Part 46.101 (b) exemption category #4 de-identified data. Your project has been approved and will be filed with the College IRB proposals.

As described, the project complies with all the requirements and policies established by the College of St Scholastica for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Should any changes be made in your procedures, or if you should encounter any new risks, you are required to inform the IRB committee. Please inform the SON IRB committee when this project is completed.

Thank you for your submission and best of luck with your project.

Regards,

Catherine Miller DNP, RN, C-NP

Appendix K

The College of St. Scholastica Institutional Review Board Addendum

THE COLLEGE OF ST. SCHOLASTICA
School of Nursing
Institutional Review Board

Date: 2/11/2012

Catherine Miller, DNP, RN, CNP SON IRB Chair
Sr. Kathleen Niska, RN, PhD.
Patti Senk RN, PhD
Clinical Investigator: Mary Beth Waldo, DNP Graduate Nursing Student
Clinical Project/ Study Title: Proposal # : 5.*0911 Acute Abdominal Pain Management: Educational Effect on Time to Analgesia;* Addendum for follow-up submitted 2/6/12

Dear Ms. Waldo:
The College of St Scholastica School of Nursing Institutional Review Board for the Protection of Human Subjects has reviewed your revised proposal request and determined that your study is a continuation of a previously reviewed project which continues to qualify as exempt from full IRB review under federal guidelines 45 CFR Part 46.101 (b) exemption category #4 de-identified data. Your project has been approved and will be filed with the College IRB proposals.

As described, the project complies with all the requirements and policies established by the College of St Scholastica for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Should any changes be made in your procedures, or if you should encounter any new risks, you are required to inform the IRB committee. Please inform the SON IRB committee when this project is completed.

Thank you for your submission and best of luck with your project.

Regards,

Catherine Miller DNP, RN, C-NP