Improving Nurses’ Pain Management in the Post Anesthesia Care Unit (PACU)

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Capstone Project: Improving Nurses’ Pain Management in the Post Anesthesia Care Unit (PACU)

by

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Abstract

Pain after surgery is distressing to patients and is a significant problem in post anesthesia care unit (PACU). Ineffective pain management in the immediate postoperative period can prolong the patient’s length of stay in the PACU which may lead to increased cost of care. Nurses, as important members of the team, have a unique opportunity to assess and continuously evaluate pain and its treatment. The nurses’ lack of knowledge regarding pain management and ineffective team communication are barriers to effective pain management. An educational intervention based on the Knowledge-to-Action Model was used to support the implementation of the project. This research translation project was implemented to 22 nurses in the recovery room at an urban hospital. The goals of this performance evaluation project are: 1) to assess the nurses’ knowledge on pain and its management in the PACU, the pain and comfort guideline and structured communication; 2) select, tailor and implement an educational intervention; 3) nurses will demonstrate increased knowledge after the educational intervention; and 4) nurses will report usefulness of the educational intervention to improve pain management in the PACU. A one group pre-test and post-test measure design was used to evaluate education program. The 22 nurses completed the pre and post-test for each educational session. The data was examined in each participant using a paired sample t-test. Educational interventions that target nurses’ knowledge on pain and standardized communication techniques had proven to be effective as management in the PACU (as evidenced by post-test score improvement).
Introduction

Effective pain management is a vital component to quality patient care. Nurses play an essential role in implementing pain management. Empowered nurses equipped with the latest innovative knowledge, skills and information are able to provide safe and compassionate care for patients during their most vulnerable time in the post anesthesia care environment. The dissemination of evidence-based pain management information is crucial to provide the nurse with unbiased resources that could shape their knowledge and attitudes. An environment defined by an open communication and exchange of ideas, would help facilitate the knowledge growth of nurses and empower them in their workplace to provide expert nursing care.

Efforts to improve postoperative pain management have been ongoing for many years. (Mackintosh-Franklin, 2013). Nurses are continually faced with the challenges of treating pain despite the findings and recommendation of substantial past research (Wells et al., 2008). This may be due to their lack of knowledge regarding appropriate pain management (Abdalrahim et al., 2011). To ensure the best quality of care for patients, nurses need effective knowledge, skills, and attitudes to address pain issues (Stanley & Pollard, 2013). Increased in knowledge of the mechanism of pain, effective pain assessment and pharmacological and non-pharmacological management will promote positive patient outcomes (Al Shaer et al., 2011).

Ineffective communication between clinicians and patients and among clinicians was identified as one of the barriers to effective pain management (Dilhe et al., 2006). Communication about pain is vital to patient comfort, thus clear, concise and timely communication between nurses and physicians is necessary for pain management. Likewise, communication is important in determining effectiveness of the patient’s treatment plan. Nurses’
ability to deliver clear, concise and timely communication of evidence-based information on pain and its appropriate treatment and pertinent clinical guidelines is essential to effective pain management.

Regardless of the availability of well-defined guidelines to help nurses understand the treatment of acute pain, for most patients postoperative pain management is a challenge (Abrahamson, Fox, & Doebbeling, 2012). Poor dissemination strategies are recognized as the key barrier to implementation of evidence-based pain guidelines. The optimal method for implementation of pain guidelines such as audit and feedback is an effective strategy to promote clinical practice guideline use (Dulko et al., 2010). Providing nurses adequate time and sufficient information to carry out pain guidelines will improve guidelines use, thus enhancing appropriate pain management (Manias, Bucknall and Botti, 2005).

**Problem Identification and Evidence**

Acute pain is defined as the normal anticipated physiological response to an adverse chemical, thermal or mechanical stimulus associated with surgery, trauma or illness and usually resolves during the appropriate healing period. It often responds to treatment with analgesic medication and maybe accompanied by anxiety of emotional distress (Carr & Goudas, 1991 and Pain Community Center.org, 2013). Pain after surgery is distressing to patients and is a significant problem in post anesthesia care unit (PACU) (Ho, Ho, Pang Yuen, Lexshimi, & Choy, 2013 and Gandhi K, 2012). Recent data suggest 80 percent of patients experience pain post operatively (Wells, Pasero, & McCaffery, 2008). The lack of appropriate pain management results in physiological and psychological harmful effects on the patients including the risk of developing chronic pain (Abdalrahim, Majali, Stomberg, & Bergbom, 2011). Ineffective pain management in the immediate postoperative period can prolong the patient’s length of stay in
Post Anesthesia Care Unit (PACU) which may lead to increased cost of care (Wells, Pasero, & McCallery, 2008).

Achieving optimal pain-management practices in PACU continues to be a challenge for administrators, nurses, physicians, and other health care providers (Samuels & Fetzer, 2009). Advances have been made in the understanding of pathophysiology of postoperative pain and development of new analgesics and delivery techniques, regardless patients still suffer from moderate to severe postoperative pain (Ismail, Shazad, & Shafiq, 2012). Insufficient knowledge about pain, inadequate assessment and evaluation of pain and various attitudes on pain and its management were among the barriers to effective post-operative pain management (Dihle, Bjolseth, & Helseth, 2006 and Krenzischek, Wilson, Newhouse, Mamaril, & Kayne, 2004). Additionally, outdated attitudes, myths, and misconceptions about pain and its treatment among nurses and patients contribute to unsafe, inadequate, and inappropriate pain management (Dihle, Bjolseth, & Helseth, 2006). Nurses, as important members of the team, have a unique opportunity to assess and continuously evaluate pain and its treatment. Accurate knowledge, appropriate attitudes and assessment skills, and communication be able implement appropriate intervention, and be able to evaluate and communicate the outcomes of treatment in a timely manner (Krenzischek et al., 2004). The implementation of a multimodal, evidence-based, culturally competent educational and behavioral intervention will improve the quality of pain assessment, and improve nurses’ knowledge and attitudes about pain assessment and management in the PACU (Clark, Fink, Pennington, & Jones, 2006).

**Review of the Literature**

There is an emerging body of literature that supports the problems related to post-operative pain management. In a review of the literature, the following barriers to effective post-
operative pain management were identified: 1) nurses’ gaps in knowledge in pharmacological
management of pain; 2) ineffective team communication on pain management; and 3) lack of
awareness of the guidelines for pain management.

The search of the literature was carried out mainly using Pub Med, CINAHL, Academic
Search Premier, and Nursing Ovid. The initial search using the search terms: knowledge and
attitudes, and pain management and nurses, 245 studies were found. Out of 245 studies, 13 were
selected that were pertinent to nurses’ knowledge and attitudes toward pain management. When
using the search terms team communication and pain management and nurses, there were 23
studies found of which 4 articles were used that were relevant to the topic. Using the search
terms clinical guidelines and pain management and nurses, 108 articles were found 9 of which
were relevant to the topic. Thereby the sum total of the relevant studies to the three topics equals
26. The above mentioned search terms were included in the inclusion criteria. Other criteria for
inclusion in each data base were English language, full text articles, and studies published within
the last 10 years, 2003 to present. The articles were examined based on the nature of research
evidence using Johns Hopkins Nursing Evidence-Based Appraisal (JHNEBP).

Gaps in Nurses’ Knowledge Regarding Pain Management

The gaps in nurses’ knowledge that were identified in the studies reviewed were
primarily pharmacological methods of treating pain based on the Knowledge and Attitude
Survey Regarding Pain (NKASRP) [32 item questions on assessment, pharmacologic and non-
pharmacologic intervention]. Increase in knowledge about pain and its management are
associated with greater influence of attitudes on behavior. Attitudes based on high amounts of
knowledge are better predictors of behavior. Knowledge is a structural property of attitudes, as
such attitudes influence behaviors, decisions, and information processing (Fabrigar, Smith, Petty,
& Crites, 2006). Al-Shaer et al. (2011) examined nurses’ knowledge and attitudes regarding pain assessment and intervention. The results of their study showed that out of the overall participants (N=129) nurses, 61.2% received a letter grade of B or better on the modified NKASRP. The study showed that nurses had lack of knowledge regarding questions on pharmacologic interventions (greater than 60% of nurses had incorrect responses). Al-Shaer et al. (2011) noted in their study that education regarding pain assessment and management needs to be a high priority. Of the same note, Matthews and Malcolm (2007) had used the NKASRP with two groups of nurses in an orthopedic center in United Kingdom. The first group was comprised of nurses who have completed a knowledge and competency training program. The second group consisted of nurses that had only attended pain conferences and not completed a knowledge and competency training program. The results of the survey revealed that there was no significant difference in the total correct responses between the two groups. A severe deficit in knowledge relating to questions about non-pharmacological methods of treating pain and opioid use in chronic pain conditions was identified. Furthermore, Nimbalkar, Dongara, Ganjiwale, & Nimbalkar (2013) assessed the knowledge and perception regarding pain among nursing staff in a tertiary hospital in India (N=351). Results of the study revealed 60% had complete knowledge of all the basic questions asked. Only 3.1% answered all five advanced questions correctly, while 96.9 % had answered more than one question incorrectly. Overall there was a deficit in knowledge regarding pharmacological and non-pharmacological methods of pain relief and shortcomings in pain perception.

Moreover, Lui, So and Fong (2008), investigated the knowledge and attitudes of nurses in Hong Kong regarding pain management. A self-administered survey was completed by 143 nurses and there was a prominent percentage total score of 47.72 (N=143) deficit in knowledge
and attitudes related to pain management. Inadequate knowledge and inappropriate attitudes regarding pain management were reported in the study. To highlight the lack of education and pain management, further evidence from the results of the national survey conducted by Bernardi, Catania & Tridello (2008), where (N=66) nurses from nine hospice units in Italy completed the Nurses' Knowledge and Attitudes Survey after they had attended the courses on pain education. Among the 39 pain knowledge questions assessed, the correct answer rate for the entire scale, on average, was 62.7% (N=66) and 30% of hospice nurses underestimated the patients' pain where they did not treat the pain in the correct way and had incorrect self-evaluation about their pain management knowledge. The results showed that there were still significant knowledge deficits and erroneous beliefs that may hinder in pain management of oncology patients. In addition, Moceri & Drevdahl (2012) investigated the knowledge and attitudes of nurses (N=91) in five emergency rooms in the United States using NKASRP. The questions in the NKASRP survey regarding pain management knowledge specifically opioid pharmacology and dosage were incorrectly answered by more than 50% of the participants. The mean total score for NKARSP was 76%. The study suggested the need for targeted education to emergency room nurses especially with respect to opioid pharmacology and dosing.

The level of knowledge of pediatric pain management, attitudes of nurses, and the level of self-efficacy of pediatric nurses in acute care in the U.S. was examined by Stanley & Pollard (2013). Pediatric nurses in acute care (N=25) completed the Pediatric Nurses’ Knowledge and Attitude Survey Regarding Pain (PNKASRP) and Nurses’ Self Efficacy in Managing Children’s pain. The outcome of the study showed there was no statistically significant relationship between knowledge and self-efficacy (p <0.0853). The result on the PNKARSP survey regarding the level of knowledge of pain management ranges from 53% to 82%. A level of knowledge of 85%
or higher satisfies most nursing standards. The study suggested a need for increased pain management education for pediatric nurses.

The study of Duke et al. (2013) utilized NKASRP among 162 nursing students and 16 nursing faculty (N=178). The students were divided into the three groups (first semester and second semester junior students and first semester senior student nurses). Differences found in the knowledge and attitudes among three levels of students and faculty were significant (p < 0.001). Senior students nearing graduation scored only 68% with faculty scoring only 71%. Consistent with findings from other studies previously mentioned, there was a deficiency in the knowledge of medications. The outcome of the study documented the need to develop a comprehensive plan for teaching pain assessment and treatment across curriculum. Taking a closer look, Al-Khawalde, O., Al-Hussami, M., & Darawad, M. (2013) utilized NKASRP among 240 baccalaureate Jordanian nursing students. The findings revealed that there were significant differences (p<0.05) in the students’ score related to pain management training and frequency of using pain assessment tools. The mean score in the survey was 34.1% which demonstrated that nursing students have insufficient knowledge and attitudes regarding pain and its management. The study suggested additional education and training to address the issue.

Inadequate knowledge on pain management among nurses was identified by Aziato & Adejumo (2013). The study was conducted among nurse (N=14) in a tertiary hospital in Ghana, using in depth individual interview to explore the factors accounted for inadequate knowledge of post op pain management. The nurses' inadequate pain management knowledge have resulted from curriculum gaps during training; inadequate clinical supervision, study days, and workshops for practicing nurses; lack of funding for organizing regular workshops; and, negative attitudes of nurses whereby new information learned at workshops was not readily applied in
clinical practice. A holistic and expansive program to enhance pain management was recommended to address the knowledge deficiency.

McNamara, Harmon, & Saunders (2012) noted the positive effects of educational intervention and training in pain management. A study was conducted among nurses (N=59) in Ireland. The result of the study demonstrated a significant improvement on nurses’ knowledge and attitude towards pain assessment after attending an acute pain educational program. Consistent with the above findings, Ho, S., Ho, C., Pang Yuen, H., Lexshimi, R., & Choy, Y. (2013) conducted a study among nurses (N=86) in Malaysia. The outcome of the study showed that nurses who have previously attended a pain course have increased their knowledge and attitude towards pain management using a modified NKASRP. It was noted in the study that pain education and nurses’ knowledge on opioid pharmacology had improved nurses’ ability to provide proper and adequate pain management.

Nurses are continually faced with the challenges of the treating pain. To ensure the best quality of care for patients, nurses need effective knowledge, skills, and attitudes to address pain issues (Stanley & Pollard, 2013). Despite the findings and recommendation of substantial past research, nurses continue to demonstrate inadequate knowledge of pain assessment and pain management interventions (Wells et al., 2008). From reports in the literature, knowledge about pain management and attitudes which underpin nurses’ pain management decisions are problematic. Nurses’ knowledge of the mechanism of pain, pain assessment and pharmacological and non-pharmacological management are essential components in promoting positive patient outcomes (Al Shaer et al., 2011). The following sections will further explain the definition of pain, acute and chronic pain, pain theories, repercussions of untreated pain, pharmacologic and non-pharmacologic interventions to acute pain.
Definition of pain

The International Association for the Study of Pain in 1979, defines pain as “unpleasant sensory or emotional experience associated with actual or potential tissue damage” (Shaik, Hakim, & Skenker, 2010). In the past 30 years, there have been rapid advances in knowledge about pain and its treatment (Molloy & Cousin, 2009). Although pain is a universal experience, there are extensive differences in the perception, expression, and tolerance of pain. This is due to a variety of physiologic, psychologic, and socio cultural influences that add to the intricacy of pain management (Miller & Newton, 2006). In exploring the physiologic aspect of acute pain, knowledge and understanding on the definition of acute pain is relevant. Likewise it is important to take into consideration the difference between acute pain and chronic pain, since the acute and chronic pain underlying causes and management vary.

The two types of pain: acute and chronic

Acute and chronic pain are so different from one another that they must be considered separate entities. Acute pain usually begins suddenly after trauma or surgery and serves as a useful biologic purpose. It results from disease, inflammation or injury to tissues, and is associated by a skeletal muscle spasm and sympathetic nervous activation. It is usually self-limited (disappears when underlying cause is treated) and may be accompanied by anxiety or emotional distress. Unrelieved acute pain may lead to chronic pain. Chronic pain may be considered a disease state and may arise from psychological and environmental states. If it is associated with disease or injury, the pain usually endures beyond the normal time of healing with an indefinite end point, and is usually resistant to the majority of medical treatment (Grichnik & Ferrante, 1991; National Institute of Neurological Disorders and Stroke [NINDS], 2001).
Awakening from general anesthesia in PACU and suffering severe acute postoperative pain is extremely frightening. Taking a closer look at postoperative pain, it is important to discuss the mechanism for acute pain generation. Acute pain starts with recognition of noxious stimuli signaling from recently damaged tissue. The sensory pathways for pain caused by tissue damage transmit information from the damaged tissue to the central nervous system (nociception). Nociceptive pain is accompanied by an inflammatory, visceral and neuropathic pain mechanism. The sensitization of peripheral and central neuronal structures amplifies the pain and sustains postoperative pain (International Association for the Study of Pain [IASP], 2011). Acute pain can cause significant physiological and psychological effects. The physiological effects of acute pain involve changes in cardiovascular, respiratory, endocrine, metabolic, gastrointestinal and hemostasis (Pain Community Center.org, 2013). The patients’ experience of acute pain can be explained by pain theories such as gate control theory (Moayedi & Davis, 2013).

Theories of pain

There are a number of theories that have been postulated to describe the process underlying pain perception. The most common and universally recognized pain theory is the Gate Control Theory by Melzack and Wall in 1965 supporting the acute pain experience. Melzack’s reconceptualization of neuromatrix pain theory was derived from the Gate Control Theory to further explain the phenomena of chronic pain (Trout, 2004).

Gate-Control Pain Theory. Despite the frequency with which nurses encounter patients with pain, there is evidence that they still fail to understand some of the theories and mechanisms governing pain production and control (Davis, 1993). One such theory, the Gate Control Theory, widely considered to be one of the most influential to practitioners, was proposed by Melzack
and Wall (1965). This theory of pain had stimulated endless arguments and debates and had revolutionized pain research. According to their theory, a stimuli or an impulse originating from the level of the skin is carried by small fibers known as T-cells (located in the specific area of the spinal cord known as substantia gelatinosa [gray matter]) that enter the dorsal horn of the spinal cord and then are transmitted to the brain. They associated the substantia gelatinosa to the “gate-control” system that adapts the response from the stimulus before they influence the T-cells. These fibers can have an impact on the smaller fibers that carry the pain stimulation. Large fiber activity inhibits the communication of stimulation [closing the neural gates in the spinal cord], while small fiber activity allows stimulation to be communicated into the central nervous system [opening the gates within the spinal cord] (Moayedi & Davis, 2013). Melzack and Wall’s original gate control concept for pain did not account for perception of pain in the absence of a stimuli such as phantom limb pain), thus neuromatrix pain theory was established.

Neuromatrix pain theory. The neuromatrix pain theory was developed by Melzack in 1965 as an expansion beyond his original “gate-theory” of pain. The concept of a pain "neuromatrix" suggests that perception of pain is simultaneously modulated by multiple influences including one’s past experiences, cultural factors, emotional state, cognitive input, stress regulation and immune systems (Trout, 2004). Essentially everyone experiences pain at some point in life. The pain experience is most often in association with surgical procedures, medical conditions, or physical trauma (Savage, Kirsh, & Passik, 2008). Untreated acute pain causes unnecessary sufferings and can interrupt the healing process.

Harmful effects of untreated pain

Pain has been perceived as a problem of global proportions, and postoperative pain prevalent in clinical settings. Although postoperative pain in PACU is preventable and treatable,
it is often undertreated. The lack of appropriate pain management can lead to negative clinical outcomes such as extended hospitalization, compromised prognosis, higher morbidity and mortality, and the development of chronic pain. In adequate pain management can generate an economic burden resulting from direct costs due to excess health-care resource use and indirect costs due to reduced patient functionality and productivity. Productivity losses and poor patient functionality can have an adverse impact on patient’s quality of life leading to development of anxiety and depression (Stephens, Laskin, Pashos, Pena, & Wong, 2003; Savage, Kirsh, & Passik, 2008). Additionally, a prospective cohort study by Morrison et al. (2003) had shown that postoperative pain is associated with increased hospital length of stay, delayed ambulation and long term functional impairment. Prevention of harmful effects of pain can be done by managing the pain appropriately using pharmacologic and non-pharmacologic methods.

**Pharmacologic and Non-pharmacologic**

**Pharmacologic.** In the past, the pain management in the PACU setting relied profoundly on bolus titration of opioids and occasionally incorporating one non opioid agent (ketorolac). Recent guidelines from the American Society of Anesthesiologist (ASA) Task Force 2012, recommend maximizing the use of non-opioid analgesic, and opioid dosing as adjunctive analgesic round the clock on an as needed basis (Gandhi, 2012).

**Opioids use in the PACU.** Morphine, Hydromorphone and Fentanyl are commonly used in the PACU. Morphine is the universal opioid for acute pain management. It is a prototypical opioid and the standard to which all other opioids are compared. The hydrophilic characteristic of morphine produces a moderate analgesic potency as well as slow onset and intermediate duration of activity. It has a half-life of 2 hours and duration of 4-5 hours. Hydromorphone is a semisynthetic opioid that is 4-6 times more potent than morphine. It has a fifteen- minute onset
which makes it very useful in PACU where rapid analgesia is desired; and has a longer duration of action (greater than five hours). Furthermore, fentanyl is a synthetic opioid that is 50-80 times stronger than morphine. It has a rapid onset of action (10 seconds) with a short duration of action (30-45 minutes). Fentanyl can be very effective in PACU setting (Gandhi, 2012).

Non opioids use in the PACU. Non opioid analgesics such as Acetaminophen, Non-steroidal- anti-inflammatory drugs (NSAIDs) such as Ibuprofen and Ketorolac are essential adjuncts to opioid –based medications for administering analgesia in the PACU setting. Acetaminophen functions via inhibition of cyclooxygenase producing effective analgesia as well as antipyretic effect. NSAIDs likewise inhibit cyclooxygenase and have powerful peripheral anti-inflammatory properties. In 2009 the FDA approved the use of an intravenous form of an NSAID. Ketorolac, which comes only in intravenous form, has been a useful non opioid adjunct in managing acute pain in PACU (Gandhi, 2012).

Regional Analgesia use in the PACU. Superior to opioids in the management of post-operative pain is the use of regional anesthesia, especially in the orthopedic population. The ASA Task Force on Acute Pain Management guidelines clearly emphasized a multimodal approach including regional analgesia. Common regional anesthetics include brachial plexus, lumbar plexus, femoral, saphenous and sciatic nerve blocks (Gandhi, 2012).

Non-pharmacologic. For many years, nurses have used non-drug techniques to help patients manage their pain. Although the evidence of its effectiveness cannot be researched in a controlled, blinded manner, it was supported by anecdotal reports (patients saying the methods help). Non-drug interventions are effective because they require nurses to interact with patients in a manner that includes offering hope of relief, establishing emphatic relationship and spending time working directly with the patient (McCaffery, 2002). Non-pharmacologic techniques are
classified as cognitive and physical. During the episodes of acute pain, patients rely on these
previously proven cognitive methods such as breathing, meditation, imagery, music and
distraction or focusing attention away from pain. Physical techniques on the other hand focus on
altering physiological processes that may reduce pain. Included in this technique are massage,
repositioning as well as heat and cold application (Wells, Pasero, & McCaffery, 2008). Dilhe, et
al. (2006) identified insufficient knowledge about pain and its management and ineffective
communication between clinicians and patients as well as clinician to clinicians were hindrances
to pain management.

**Effective team communication is vital**

Communication is defined as “the imparting or interchange of thoughts, opinions, or
information by speech, writing or signs” (http://dictionary.reference.com/). Effective clinical
practice involves communicating critical information accurately (O’Daniel & Rosenstein, 2008).
The lack of communication between nursing and physician staff was identified as a barrier to
effective pain management by Ellis, McCleary, Blouin, Dube, & Rowley (2007).
Communication about pain is vital to patient comfort thus, clear, concise and timely
communication between nurses and physicians is necessary to pain management. Likewise,
communication is important in determining effectiveness of the patient’s treatment plan.

Brondal & Halldorsdottir (2012) described communication and mutual decision making
between nurses and doctors as a gate in which doctors are the gate keepers. Because nurses have
a “voice” at the “gate” and the patient does not, the nurse must represent the patient and use their
influence and experience in order to achieve the best possible results in regards to alleviation of
patient pain. Subsequently the doctor decides what medication the patient can or cannot receive.
Nurses must communicate with the doctors to achieve a better outcome for the patient.
According the Joint Commission, improved communication in health care setting leads to positive outcomes such as: a) improved patient safety; b) improved quality care and patient outcomes; c) decreased length of patient stay; d) improved family and patient satisfaction; and e) enhanced staff morale and job satisfaction (The Victorian Quality Council, 2010). Clearly, communication between the members of the health care team is fundamental to achieving adequate pain management. Nurses’ ability to deliver clear, concise and timely communicate evidence – based information, regarding pain and its appropriate treatment and pertinent clinical guidelines is essential to effective pain management.

**Pain management guidelines are essential**

Regardless of the availability of well-defined guidelines to help nurses understand the treatment of acute pain, postoperative pain is not relieved in most patients (Manias, Bucknall and Botti, 2005; Abrahamson, Fox, & Doebbeling, 2012). Clinical practice guidelines are systematically developed recommendations that provide a framework for decision making in clinical practice (Krenzischek et al., 2004) Several professional organizations have developed clinical practice guidelines to direct health care providers in providing adequate management of acute pain. The guidelines should be current sound scientific evidence that is translated into practice recommendations by an expert panel in their specialty. In the absence of scientific evidence, the expert panel is expected to fill in the gaps and provide answers for questions that clinicians face in their daily practice. The American Society of Anesthesiologists Task Force on Acute Pain Management defines practice guidelines as “systematically developed recommendations to assist practitioner and patient in health care decision making”. The recommendations may be adopted, modified, or rejected according to clinical needs and constraints and are not intended to replace local institution policies. The implementation of

Shekelle & Fletcher (2013) identified the following potential benefits of evidence-based, carefully developed updated guidelines: 1) synthesis of the literature by experts; 2) clear recommendations for translating evidence base into clinical application to foster best practice; and 3) opportunity to evaluate outcomes of implementation in the real world setting. Francke et al. (2008); Abrahamson et al. (2012) systematic review of the literature described several factors in the implementation of clinical guidelines. The factors influencing guideline implementation were: 1) complexity of the guideline; 2) lack of awareness of the existence of the guideline and familiarity with its content; 3) resistance and lack of motivation to adopt guideline recommendation; and 4) lack of support from peers or superiors and insufficient staff and time.

There are multifaceted strategies used to implement and disseminate guidelines into clinical practice. Medves, Godfrey, Turner, Paterson, & Harrison (2010) identified that educational material was the most common strategy and mass media being the least common. Other approaches would include educational meetings, local consensus process, education outreach visits, local opinion leaders, patient mediated interventions, audit and feedback, reminders, and marketing. One version of multifaceted intervention is Promoting Action on Research Implementation in Health Services (PARIHS), a conceptual framework used to designing the strategies in the implementation of evidence-based practice. This scheme has been widely used in implementation projects and research (Helfrich et al., 2010). The application of this framework to acute pain management will aid in blending acute pain management evidence into day to day nursing practice.
Moreover, studies suggested that the use of clinical systems, computerized decision support, and prompts that support practice (e.g., decision-making algorithms, paper reminders) have a positive effect on aligning practices with the evidence base. The use of mass media, opinion leaders, change champions, and consultation by experts along with education are among strategies tested to promote use of evidence-based practice (EBP). Education is necessary but not sufficient to change practice, and didactic continuing education alone does little to change practice behavior. There is little evidence that inter professional education as compared to discipline-specific education improves EBP. Interactive education, used in combination with other practice-reinforcing strategies, has more positive effects on improving EBP than didactic education alone (Titler, 2008). Forsner, Hansson, Brommels, Wistedt, & Forsell (2010) utilized strategies such as seminars, regular feedback on performance and academic detailing in their guideline implementation. To achieve effective implementation strategies, overcoming barriers such as 1) organizational resources; 2) health care professionals' individual motivation; and 3) perception of guidelines and implementation strategies. Dulko, Hertz, Julien, Beck, & Mooney (2010) had identified audit and feedback together with provider education had increased providers’ adherence to clinical practice guideline by 87%. This intervention was an effective approach to facilitating the transfer of research evidence. The implementation of evidence-based practice pain guidelines will addresses the discrepancies in the knowledge and attitudes of nurses on pain management.

**ASPN Pain and Comfort Guideline**

The American Society of Perianesthesia Nursing (ASPN) is the body that sets forth guidelines to help regulate perianesthesia. It is a highly recognized professional nursing organization that develops recommendations as a framework for decision making in
perianesthesia nursing practice. This organization is committed to promotion of welfare, health, well being, and safety of patients, and recognizes evidence-based practice as the critical link to improving nursing practice and patient outcomes. The (ASPAN) Pain and Comfort Guideline was created to bridge the knowledge gap for perioperative nursing pain management and the urgent need to standardized evidence-based approach to the management of patients’ pain and comfort in all perianesthesia settings. It was developed in response to the Joint Commission mandate that every patient has the right to effective and safe pain management (Krenzischek, Wilson, Newhouse, Mamaril, & Kayne, 2004). The utilization of this guideline provides educational support for perianesthesia nurses in order to maintain optimal pain comfort management for perianesthesia patient (Krenzischek et al., 2004), thereby decreasing the length of stay in the recovery room.

The ASPAN Pain and Comfort Clinical Guideline is based on Kolcaba’s work which provides a logical, systematic approach to providing comfort care for perianesthesia patients. It represents a summary and subsequent testing of scientific research findings and expert opinion regarding pain and comfort management. It defines the purpose, resources, education, performance improvement parameters, and pathway documentation necessary for safe and effective management of pain and comfort in perianesthesia patients, by recommending methods for evaluating performance and implementing improvements in practice. The guideline identifies and furnishes essential educational materials and establishes and maintains high quality nursing practice. It also reduces the incidence of adverse outcomes (Krenzischek et al., 2004).

Pain and Comfort Consensus Strategic Work Team (SWT), an appointed team from ASPAN developed the preoperative and postoperative phases as components of ASPAN Pain and Comfort Guideline. The guideline focuses on the aspects of pain and comfort that can be
utilized preoperatively, and postoperatively. The postoperative phase 1 is the time period immediately following a surgical procedure. In this phase, the patient is being monitored closely (1 nurse: 1 patient ratio), until the patient maintains such criteria of hemodynamic stability including respiratory and cardiac status, numeric pain of 5 and below on a scale of 0-10, and is able to move all extremities. During phase 2 of the postoperative period, the patient maintains the criteria in phase 1 and is also able to increase mobility with minimal to absence of nausea and vomiting (Krenzischek & Wilson, 2003).

The ASPAN Pain and Comfort Guideline will standardize the perianesthesia nurses’ pain and comfort management and will positively impact pain and comfort in perianesthesia patients. Guideline development is a dynamic process and changes as new therapies evolve and new research findings are disseminated. Therefore, guidelines and educational strategies are periodically updated based on evolving research and evidence based practice (Krenzischek & Wilson, 2003). At present, the ASPAN Pain and Comfort Guideline is being amended.

**Synthesis of Evidence**

Nurses as front liners in healthcare have a unique opportunity to assess and continuously evaluate pain and its treatment. Acute pain is a significant problem in the postoperative setting, thus, nurses play an essential role in implementing pain management. As demonstrated in the literature review, gaps in knowledge in pharmacological management of pain, ineffective team communication and unfamiliarity of pain guidelines were identified as barriers to effective pain management. Educating nurses about the pain medications used in PACU, strategies to improve attitudes towards patients’ pain with utilization of pain guidelines will empower nurses to improve pain management, thus, positively impact patient outcomes.

**Theoretical Framework**
The theoretical foundation that will be used to support the implementation of this project to improve pain management in the PACU is the knowledge-to-action (KTA) cycle or model. The KTA framework (Figure 1) developed by Graham and colleagues at the University of Ottawa, is an integration of knowledge creation and knowledge application. It has two main elements: 1) a knowledge creation as being similar to a funnel, where new knowledge moves through the stages until it is adopted and used; and 2) an application of knowledge cycle, which represents the activities that implement or apply the knowledge (White and Dudley-Brown, 2012).

Knowledge creation as the first element of the KTA model, consists of three phases: 1) knowledge inquiry as the first generation of knowledge that is in its natural state and largely unrefined; 2) knowledge synthesis as the second generation knowledge representing the aggregation of existing knowledge; and 3) knowledge tools and products (practice guidelines and care pathways) as the third generation knowledge. Knowledge at the wide mouth of the funnel includes the broad stage of inquiry and primary research. As knowledge moves through the funnel, it is synthesized, and finally tools or products that are needed to present the new knowledge are developed to easily apply the knowledge. At each step of the knowledge creation process, the producer of the knowledge has the ability to tailor the activities to meet the needs of the knowledge consumers (White and Dudley-Brown, 2012).

The application of knowledge cycle (action phase), the second element of the KTA model, represents the activities that maybe needed for knowledge application. It consists of phases starting with the first phase (identify a problem that needs addressing) and the last phase (sustain ongoing knowledge use) (Figure 1). The phases are dynamic, can be influenced by the phases that precede it, and can be influenced by knowledge creation phase. During the action
phase cycle, it is essential to evaluate the impact of using the knowledge, whether application of knowledge makes a difference on patients, health practitioners and or the system (Graham, Logan, Harrison, Straus, & Tetroe, 2006).

Figure 1. The Knowledge-to-Action Cycle. Retrieved at http://www.who.int/reproductivehealth/topics/best_practices/greatproject_KTAframework/en/

The integration of knowledge creation and knowledge application represents the theoretical foundation to support the implementation of the program to improve nurses’ pain management in the PACU. The KTA model provides the theoretical basis for identifying methods to improve nurses’ pain management in the PACU. One method of improving pain management in the PACU is an educational intervention. Gustafsson & Borglin (2013) noted that theory based educational intervention that target nurses’ knowledge regarding pain management has proven to be effective. The educational sessions that will be conducted are: 1) pain and its management in
the PACU and the ASPAN on Pain and Comfort Guideline; and 2) structured communication. The KTA framework will be utilized as the basis for the educational intervention. The application of KTA framework in educational intervention can be done through assessing the barriers (lack of awareness and lack of familiarity) to knowledge use by using questionnaire survey. The survey that will be conducted prior to educational intervention will consist of the following questions: 1) “Are you familiar with the ASPAN pain and Comfort Guideline?”; and 2) “Have you heard about the SBAR communication method?”. In selecting and tailoring an educational intervention, a passive and active educational intervention was chosen. Passive educational intervention in the form lecture (power point presentation) and discussion of a case study. Active interventional intervention in the form role playing communication techniques focusing on nurse and physician communication. Evaluation of outcomes can be done by completing a post-test and evaluation at the end of the educational intervention.

Project Description, Implementation and Monitoring

Description of Group, Population and Community

The setting for this research translation project took place at an academic research and teaching hospital in Springfield, Massachusetts. It is the only level 1 trauma center in Western part of the state with a 716-bed facility comprised of 10,000 employees. The organization includes Heart and Vascular building for these procedures, Chestnut surgery building for outpatient cases and the main operating room for all other in-patient surgeries (Baystate Health, 2013). The hospital is located in an urban area with a population estimate of 153,552 as of 2012 comprised of 51.8% White, 38.8% Hispanic or Latino, 22.3% African American, 2.4% Asian and other race (United States Census Bureau, 2012).
Organizational Analysis of Project Site

The site chosen for the research translation project was in the general surgery PACU. The setting is located on the first floor, in the Daly building, where there is an average of 30 post op patients in 24 hours, excluding weekends. The most common surgeries are: hip and knee replacements, back surgeries, gynecological surgeries and thoracic surgeries. The PACU nursing management consists of a Unit Manager, Clinical Coordinator and Clinical Nurse Specialist. The chosen site is staffed with 20 regular RNS and 2 per diems. The anesthesia attending physician, along with an anesthesia resident, oversees the immediate medical needs of the post op patients.

Key Stakeholders

The primary stakeholders for this performance improvement project are the 22 RNs who provide the bedside care to post- operative patients, the Unit Manager, Clinical Care Coordinator, and Clinical Nurse Specialist. Engaging these individuals is vital for the success of this project. The Project Manager will maintain communication with the Clinical Nurse Specialist who also serves as the third member of the capstone project committee.

Resources, Constraints, Facilitators and Barriers to Implementation

A verbal agreement was made between the Unit Manager, Clinical Nurse Coordinator, Clinical Nurse Specialist and the Project Manager to use all available resources including use of online information, the unit’s available room for the meeting. Other resources for this project included photocopies of the ASPAN Pain and Comfort Guideline. Potential barriers and constraints to the project implementation would include the time required to: 1) reeducate the nurses on pain and its management in the PACU, the ASPAN Pain and Comfort Guideline; 2) introduce a method of structured communication using the SBAR. Other barriers would include nurses’ time constraints and work load, nurses’ resistance to change including their culture,
beliefs, lack of interest and their capability to carry out suggestions. To address the nurses’ time constraints and workload, the educational intervention was conducted in the morning on the fourth Thursday of the month (educational day for nurses) since the surgery is delayed due physicians’ monthly meeting. In order to implement the educational intervention to nurses working off shifts, the educational activity was conducted multiple times particularly on weekends when the census is lower and the nurses are available.

**Project Design and Feasibility**

A one group pre-test and post-test measure design was used to evaluate the educational program. There were two sessions of the educational program. The educational intervention was based on the guiding framework (Knowledge- to- Action Model). The first session of the educational intervention was on pain and its management in the PACU and the ASPAN Pain and Comfort Guideline. The case study presentation was chosen as part of the learning activity in the first session of the educational intervention due to the following benefits: (1) it allows the application of theoretical concepts to be demonstrated, thus bridging the gap between theory and practice; (2) it encourages active learning; (2) it provides an opportunity for the development of key skills such as communication, group working and problem solving; (4) it increases the students’ enjoyment of the topic and hence their desire to learn (Davis & Wilcock, n.d.).

The second session of the educational program was on structured communication. One communication strategy to improve communication between nurses and physicians is the use of a standardized communication format, the SBAR an acronym for: **Situation**: What is going on with the patient? **Background**: What is the clinical background or context? **Assessment**: What do I think the problem is? **Recommendation**: What do I think needs to be done for the patient? SBAR provides a standardized means for communicating in patient care situations, it is effective
in bridging differences in communication styles and helps to get all team members in the “same movie” (Dingley, Daugherty, Derieg, & Persing, 2008). Application of the SBAR communication technique will be in the form of role playing of scenarios. Role playing offers many advantages: 1) it engages the students in the learning process as they are not passive recipients of the instructor’s knowledge, rather, they take an active part; 2) it prepares students to deal more efficiently and competently with real clinical situations; 3) it enables students to gain confidence while reducing their anxiety and enhancing their communication skills (Dawoo, 2013).

Pre and post educational intervention data related to pain and its management in the PACU and the ASPAN Pain and Comfort Guideline, and structured communication (SBAR) was examined for each participant using inferential statistics such as t-test. A t-test is a statistic that checks if two means (averages) are reliably different from each other (Duke, 2010). The type of t-test that will be utilized is a paired sample t-test. Paired sample test will test the mean scores of one group (22 nurses) was be tested twice; the first was be before the educational intervention and the second was after educational intervention.

**Goals and Objectives with Expected Outcomes**

The goals of this performance evaluation project are: 1) to assess the nurses’ knowledge on pain and its management in the PACU and the ASPAN Pain and Comfort Guideline; and structured communication, the SBAR; 2) to select, tailor and implement an educational intervention focusing on pain, its management, ASPAN pain guideline and structured communication; 3) nurses will demonstrate increased knowledge of the ASPAN Pain and Comfort guideline and the SBAR communication tool; and 4) nurses will report usefulness of the educational intervention to improve pain management in the PACU. The specific objectives are:
1) to recruit an adequate number of agreeable nurses to attend the two educational sessions and 
2) the 22 nurses will complete the pre and posttests after each educational intervention.

The measurable outcome for this project were as follows 1) 100 % were successfully 
recruited to participate in the performance improvement project; 2)100% of the nurses completed 
the pretests (Appendix B and Appendix G) prior to each educational session; 3) 100% completed 
posttests (Appendix C and Appendix H) after each educational session.

Cost (Budgeting)

The DNP candidate conducting the project absorbed the cost of labor including planning, 
staff communication, arranging agreements, data collection, data entry and analysis.

Table 1. Itemized Cost

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost ($)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A) Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Copying and printing of handouts and questionnaires</td>
<td>$20.00</td>
<td>$20.00</td>
</tr>
<tr>
<td>• 1 pack of pens</td>
<td>$5.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>• 1 ream copy paper colored and plain white</td>
<td>$15.00</td>
<td>$15.00</td>
</tr>
<tr>
<td>B) Facilities (meeting place)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Systems (hardware and software)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: Food and Beverages</td>
<td>$ 50</td>
<td>$ 50.00</td>
</tr>
<tr>
<td>Transportation/Travel</td>
<td>$ 100</td>
<td>$ 100.00</td>
</tr>
<tr>
<td></td>
<td>(5 round trips- $20 per trip)</td>
<td></td>
</tr>
<tr>
<td>Total Estimated Cost</td>
<td></td>
<td>$ 280.00</td>
</tr>
</tbody>
</table>

IRB Approval/Ethical Consideration
This project involved educational intervention to the nurses to improve pain management in the PACU. Given the program evaluation design of this project, it is exempt from Institutional Review Board (IRB) requirements. There were no identifiable risks to the project participants, nor the need to identify any participants’ identity. Confidentiality was maintained at all times during the research translation project, and nurses who completed the surveys were asked not to write their name on the form. The protection of data collected was placed in a locked storage area within the unit.

**Implementation and Evaluation**

A program evaluation design was chosen for this research translation project. A total of 22 nurses in the PACU were approached about the participation in the project. An educational intervention was chosen to implement the performance evaluation project. The educational interventions were focused on pain and its management in the PACU, ASPAN pain and comfort guidelines and the SBAR. In selecting and tailoring an educational intervention, a passive and active educational approach was chosen. Passive educational intervention included a power point presentation and a discussion of a case study. Active educational intervention was in the form role playing communication techniques focusing on nurse and physician communication. The outcome evaluation as the last step of knowledge-to-action model was measured by posttest survey on the knowledge of pain and its management, SBAR and the satisfaction survey.

The first educational activity (Appendix A) was on pain and the ASPAN Pain and Comfort Guideline. In assessing the barriers (lack of awareness and lack of familiarity) to knowledge use, a question was asked: “Are you familiar of the ASPAN Pain and Comfort Guideline?” prior to completion of the pre-test survey. The participants completed the pre-test survey for 10 minutes (Appendix B) and returned the pre-test survey to the project investigator.
In selecting and tailoring the intervention, the DNP candidate conducted an educational session intervention in the form of power point presentation for 20 minutes. This was followed by a case study presentation and a discussion (Appendix E) depicting the ASPAN Pain and Comfort Guideline for 5 minutes. The participants completed a survey and an educational activity evaluation (Appendix C and Appendix D) for 10 minutes at the end of the educational activity.

The second educational session was on structured communication using the SBAR method which was adapted from the Inter Professional Communication SBAR Module by the Jefferson Inter Professional Education Center (2006). The DNP candidate conducted an educational activity (Appendix F) in the form of a power point presentation and role playing. In assessing the barriers to knowledge use, a question was asked: “Have you heard about SBAR communication method?” prior to completion of the pre-test survey. The participants completed the pre-test survey (Appendix G) for 5 minutes and returned the survey to the project investigator. A power point presentation on SBAR method was conducted for 15 minutes, followed by a You-Tube SBAR video for 5 minutes. Each participant was given a handout practice tool and practice guide (Appendix I) after the power point presentation and the You Tube video. This was be followed by the application of SBAR communication technique in the form of role playing of scenarios (Appendix J). The SBAR communication technique was be specific to nurse and physician interaction concerning pain management. The participants break into small groups to role play scenarios for 10 minutes. During the role playing, each participant took turns being the speaker and the listener. After the role playing the participants completed the post-test survey and evaluation (Appendix H) for 5 minutes. Specific instructions for role playing adapted from Jefferson Inter Professional Education Center (2006) are outlined below:

1) The participants will to take turns being the speaker and being the listener.
2) When speaking with SBAR, one does not have to actually say, “S – situation, “I am calling…

3) Practice SBAR sheets are handed out as a guide.

4) Participants should begin all communications with: two identifiers in the process. For example, say “This report is about Bob Henry, DOB 2/24/60”

5) Participants should end all communications with: What questions do you have for me “I am here until (insert time). If you have questions later on, call ext. and ask for me, (insert name).”

**Timeline**

Table 2. Timeline

<table>
<thead>
<tr>
<th>Time</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2013</td>
<td>Capstone Project Proposal formulated</td>
</tr>
</tbody>
</table>
| January – February 2014 | • Capstone Project Approval  
                          | • Meet with DNP outside mentor (clinical nurse specialist in the PACU) and provide an in-depth review of the project  
                          | • Materials preparation- Determine questionnaires/measures to be used.  
                          | • Explain project design                                              |
| February – March 2014 | • Implement education program                                       |
| February 20, 2014   | • First educational intervention                                     |
| February 23, 2014   | • Second educational intervention                                    |
| February 24, 2014   | • Third educational intervention                                     |
| March 1, 2014       | • Fourth educational intervention                                    |
| March 2, 2014       | • Fifth educational intervention                                     |
| March-April 2014    | Continue project (Data Collection and Data Analysis)                |
| April-May           | Finish project                                                      |
Project Results

Twenty two nurses were approached to participate in this performance improvement project. All nurses were all assessed, educated and evaluated regarding their knowledge on pain and its management in the PACU, the ASPAN pain and comfort guideline, and the SBAR. I held 5 separate educational sessions; the first presentation was on February 20, with the following sessions done on the weekends February 22, 23, March 1, and 2. There were 12 nurses who were present during the first day of the presentation. It was an hour and a half for the power point presentation, discussion of case study, and role playing for structured communication. The remaining four days of educational sessions were done on weekends before 7 am and 7 pm in order to include those working off shifts and weekends.

A pretest was completed by 22 nurses in order to assess the baseline general knowledge on pain and its management in the PACU and the ASPAN Pain and Comfort guideline and the awareness of ASPAN Pain and Comfort Guideline is 55 percent (n=12) out of 22. Nurses awareness survey of SBAR was 63 percent (n=14) out of 22 nurses. A posttest immediately post intervention was completed by 22 nurses. A pre and post intervention data related to pain and its management in the PACU and the ASPAN Pain and Comfort guideline and the SBAR were examined for each participant using a paired-sample t-tests (see Table 5 and 6). Data related to pain and ASPAN knowledge showed pre intervention mean score of 18.86 and post intervention mean score of 21.73. The difference between pre and post intervention showed a mean of 2.87 and the t-test gives a statistically significant (p<0.05) improvement in scores (see Table 3). Data related to SBAR showed pre intervention means score of 6.18 and post intervention mean score of 20.8. The difference between pre and post intervention showed a mean of 4 and the t-test
gives a statistically significant (p<0.05) improvement in scores (see Table 4). Results of itemized data analysis for the pretest and posttest for both educational activities are found in table 5 and 6.

During the case study presentation each participant provided the appropriate answers and rationale to the question. The role playing of scenarios specific to nurse physician interaction was done by each participant. The participants had to use the handout practice tool and practice guide (Appendix I) during the role playing. There was a time constraint for role playing during the first day of educational intervention since some nurses had to leave in order to attend to their patient assignments. The time for role playing was not an issue during the educational interventions that were conducted on weekends. In order to reinforce nurses’ knowledge in using the SBAR practice guide was placed near the phone and on the units’ communication board.

Table 3. T-test: Paired Sample (Pain & Management & ASPAN Pain and Comfort Guideline)

<table>
<thead>
<tr>
<th></th>
<th>mean (pretest)</th>
<th>mean(posttest)</th>
<th>df</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18.86</td>
<td>21.73</td>
<td>28</td>
<td>2.15</td>
<td>0.039</td>
</tr>
</tbody>
</table>

Table 4. T-test: Paired Sample (SBAR)

<table>
<thead>
<tr>
<th></th>
<th>mean(pretest)</th>
<th>mean(posttest)</th>
<th>df</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16.8</td>
<td>20.8</td>
<td>8</td>
<td>2.59</td>
<td>0.031</td>
</tr>
</tbody>
</table>

Table 5. Item Analysis: Pain Management & ASPAN Pain and Comfort Guideline

<table>
<thead>
<tr>
<th>Item #</th>
<th>Pre-Test (n=22)</th>
<th>Post-Test (n=22)</th>
<th>Group Change in Scores (Pre-Test &amp; Post Test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 % (n=22)</td>
<td>100% (n=22)</td>
<td>0%</td>
</tr>
<tr>
<td>2</td>
<td>95% (n=21)</td>
<td>100% (n=22)</td>
<td>5%</td>
</tr>
</tbody>
</table>
Table 6. Item Analysis: SBAR

<table>
<thead>
<tr>
<th>Item #</th>
<th>Pre-Test (n=22)</th>
<th>Post-Test (n=22)</th>
<th>Group Change in Scores (Pre-Test &amp; Post Test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>72% (n=16)</td>
<td>95% (n=21)</td>
<td>23%</td>
</tr>
<tr>
<td>2</td>
<td>90% (n=20)</td>
<td>100% (n=22)</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>54% (n=12)</td>
<td>82% (n=18)</td>
<td>28%</td>
</tr>
<tr>
<td>4</td>
<td>82% (n=18)</td>
<td>100% (n=22)</td>
<td>18%</td>
</tr>
<tr>
<td>5</td>
<td>82% (n=18)</td>
<td>95% (n=21)</td>
<td>13%</td>
</tr>
</tbody>
</table>
Table 7. Evaluation for Educational Activity #1

<table>
<thead>
<tr>
<th>Item #</th>
<th>Strongly Agree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>55%</td>
<td>35%</td>
</tr>
<tr>
<td>2</td>
<td>60%</td>
<td>30%</td>
</tr>
<tr>
<td>3</td>
<td>75%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Table 8. Evaluation for educational activity # 2

<table>
<thead>
<tr>
<th>Item #</th>
<th>Scale 1-10 (confidence ruler)</th>
<th>Percentage of Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Answered 10</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Answered 8</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Answered 7</td>
<td>5%</td>
</tr>
<tr>
<td>2</td>
<td>Answered 10</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>Answered 9</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Answered 7</td>
<td>30%</td>
</tr>
</tbody>
</table>

Discussion

This performance evaluation project was based on the theoretical framework, the knowledge- to -action model. The following are the steps of the framework: 1) **Identify the problem and select knowledge.** The lack of knowledge on pain and its management in the PACU and ineffective team communication were identified as the problem. Educational intervention including knowledge of pain and its management, ASPAN pain and comfort guideline, and the SBAR were chosen topics to address lack of knowledge and ineffective communication. 2) **Adapt knowledge to local context.** Prior to implementation of educational sessions, nurses’
knowledge was assessed using the survey questions: a) Are you familiar with the ASPAN Pain and Comfort Guideline?”; and b) Have you heard about the SBAR communication method? 3) **Assess barriers to knowledge use.** The barriers to knowledge use would include the time required to: a) reeducate the nurses on pain and its management in the PACU as well as the ASPAN Pain and Comfort Guideline and b) introduce a method of structured communication using the SBAR. Other barriers would include nurses’ time constraints and work load, nurses’ resistance to change including their culture, beliefs and lack of interest. 4) **Select, tailor and implement intervention.** An educational intervention was chosen to implement the performance evaluation project. The educational interventions were focused on pain and its management in the PACU, ASPAN pain and comfort guidelines and the SBAR. In selecting and tailoring an educational intervention, a passive and active educational approach was chosen. Passive educational intervention included a power point presentation and a discussion of a case study. Active educational intervention was in the form role playing communication techniques focusing on nurse and physician communication. Five educational sessions were held; four out of five sessions were done on weekends before 7 am and 7 pm in order to include those working off shifts and weekends. 5) **Monitor knowledge use.** The application of knowledge regarding pain and its management were in the form of case study and role playing. 6) **Evaluate outcomes.** Outcome evaluation was measured by posttest survey on the knowledge of pain and its management, SBAR and the satisfaction survey.

An educational intervention was chosen to address nurses’ inadequate knowledge about pain and its management as well as ineffective team communication. The first educational session was presented in the form of a power point presentation comprised of a discussion about pain, its management in the PACU and the ASPAN pain and comfort guideline and was followed
by a discussion of a case study. The second educational intervention was presented in the form of power point presentation comprised of the discussion about SBAR and was followed by role playing of scenarios. The 22 nurses completed the pre and post knowledge survey, which resulted an improvement in posttest scores. The result of the project supported evidence in the literature by Gustafsson & Borglin (2013), the theory based (knowledge-to-action model) educational interventions that target nurse’s knowledge regarding pain management are effective.

Limitations/Recommendations

This project had some number of limitations. First, the small sample size and the use one group pre and posttest design at one institution weaken the result and do not allow for generalizability. The utilization of convenience sample versus a randomized sample increased the sample bias thus limiting generalizability. Specific recommendation for this educational intervention include additional time to practice the role playing using SBAR in order to be competent. Regular teaching sessions within the clinical settings will reinforce and update nurses’ knowledge and skill regarding pharmacological pain management used in the PACU. Further enhancement of this project’s design and sustainability, could be done if replicated in multi sites PACU setting. Other available settings located in the hospital would be the heart and vascular PACU and Chest nut surgery PACU for outpatient cases.

Conclusion

Effective pain management is a vital component to quality patient care. Nurses play an essential role in implementing pain management. The lack of knowledge regarding pain management and ineffective team communication were barriers to effective pain management (Gustafsson & Borglin, 2013; Dilhe, et al., 2006). An educational intervention based on the
Knowledge- to-Action Model addressed these barriers. Educational interventions that target nurses’ knowledge on pain and standardized communication techniques had proven to be effective as management in the PACU (as evidenced by post-test score improvement). As noted by Al-Shaer et al. (2013), the nurses’ knowledge on the mechanism of pain, pharmacological and non-pharmacological management promote positive patient outcomes. According to Joint Commission, improved communication among clinicians lead to improved quality of care and patient outcome (The Victorian Quality Council, 2010). This research translation project will provide as a basis for future study in improving nurses’ pain management. Yet, noted by Gustafsson and Borglin (2013), this theory-based education intervention has been sparsely researched and needs to be evaluated further in larger projects.
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Brondal, K., & Halldorsdottir, S. (2012). When theoretical knowledge is not enough:
Introduction of an explanatory model on nurse’s pain management. In G. Racz (Ed.),
*Pain Management-Current Issues and Opinions*, p. 519). http://dx.doi.org/10.5772/29991

http://ehis.ebscohost.com.silk.library.umass.edu/ehost/pdfviewer/pdfviewer?sid=65207126-fd57-4e9a-afde-d419d7b9a6b4%40sessionmgr4003&vid=2&hid=4105

Clark, L., Fink, R., Pennington, K., & Jones, K. (2006). Nurses’ reflections on pain management
http://dx.doi.org/10.1016/j.pmn.2006.02.004

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Dawoo, E. (2013). Nursing students’ perspective about role – play as a teaching
http://dx.doi.org/10.1111/j.1365-2702.2006.01272.x


http://dx.doi.org/10.1037/0022-3514.90.4.556


http://dx.doi.org/10.1186/1472-6947-8-38


Ismail, S., Shazad, K., & Shafiq, F. (2012). Observational study to assess the effectiveness of postoperative pain management of patients undergoing elective cesarean section. *Journal*


http://dx.doi.org/doi:10.1053/jpmn.2002.127571


http://dx.doi.org/10.1016/jpmn.2006.09.004


http://dx.doi.org/10/10.16/j.jen.2012.04.014


acute-pain


Appendix A

Educational Activity 1

Title: Pain and its Management in the PACU and the ASPAN Pain and Comfort Guideline

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>CONTENT/TOPIC</th>
<th>TIME FRAME</th>
<th>METHODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the end of the presentation the learner will be able to: 1) Identify the 2 types of pain. 2) Describe at least one pain theory. 3) List the harmful effects of pain. 4) Identify the pharmacologic &amp; non pharmacologic management in the PACU. 5) Apply the ASPAN Pain and Comfort Guideline (Post Anesthesia Phase 1).</td>
<td>A) Pain and its management in the PACU. 1) Definition of pain. 2) Two types of pain. 3) Theories of pain. 4) Harmful effects of pain. 5) Pharmacologic management of pain. 6) Non-pharmacologic management of pain. B) ASPAN Pain and Comfort Guideline 1) History 2) Post anesthesia: Phase 1.</td>
<td>45 minutes Breakdown: 1) Pre-test survey (10 minutes) 2) Power point presentation (20 minutes) 3) Case study presentation &amp; discussion (5 minutes) 4) Post-test survey and educational activity evaluation (10 minutes)</td>
<td>1) Power point presentation. 2) Case Study Presentation depicting the ASPAN Pain and Comfort Guideline.</td>
</tr>
</tbody>
</table>
## Appendix B

### Pre Test Survey Educational Activity 1

Pain and its Management in the PACU and the ASPAN Pain and Comfort Guideline

(no names required)

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>1)</strong></td>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
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<tr>
<td><strong>2)</strong></td>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
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<tr>
<td><strong>3)</strong></td>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
</tr>
<tr>
<td><strong>4)</strong></td>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
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<tr>
<td><strong>5)</strong></td>
<td><strong>True</strong></td>
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<tr>
<td><strong>6)</strong></td>
<td><strong>True</strong></td>
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<tr>
<td><strong>7)</strong></td>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
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<tr>
<td><strong>8)</strong></td>
<td><strong>True</strong></td>
<td><strong>False</strong></td>
</tr>
</tbody>
</table>
9) True  False  Patients may sleep in spite of severe pain.

10) True  False  After the initial recommended dose of opioid/narcotic analgesic, subsequent doses are adjusted in accordance with the individual patient's response.

11) True  False  There is a ceiling on the analgesia of morphine. In other words, beyond a certain dosage of morphine, increases in dosage will not increase pain relief.

12) True  False  The potency of the pain relief measure selected for the patient should be determined on the basis of known physical stimuli rather than the patient's report of pain intensity.

13) True  False  When a dose of morphine is safe but ineffective in relieving pain, clinical practice guidelines recommend increasing the dose by no more than 10%.

14) True  False  To prevent opioid induced respiratory depression, nurse monitoring of sedation level is more important than monitoring respiratory rate.

15) True  False  When morphine IV or IM is prescribed PRN for pain relief in the postoperative patient, the nurse must administer it only when the patient feels pain.

## Appendix C

Post Test Survey Educational Activity 1

Pain and its Management in the PACU and the ASPAN Pain and Comfort Guideline

(no names required)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1) True</td>
<td>False</td>
<td>Although pain is a universal experience, there are extensive differences in the perception, expression, and tolerance of pain. This is due to a variety of physiologic, psychologic, and sociocultural influences.</td>
</tr>
<tr>
<td>2) True</td>
<td>False</td>
<td>Acute pain is a result from disease, inflammation or injury to tissues, and is associated by a skeletal muscle spasm and sympathetic nervous activation. It is usually self-limited (disappears when underlying cause is treated) and maybe accompanied by anxiety or emotional distress.</td>
</tr>
<tr>
<td>3) True</td>
<td>False</td>
<td>The most common and universally acknowledged pain theory by Ronald Melzack and Patrick Wall 1965 is the Gate Control Theory.</td>
</tr>
<tr>
<td>4) True</td>
<td>False</td>
<td>The lack of appropriate pain management can lead to negative clinical outcomes such as extended hospitalization, compromised prognosis, higher morbidity and mortality, and the development of chronic pain.</td>
</tr>
<tr>
<td>5) True</td>
<td>False</td>
<td>The (ASPAN) Pain and Comfort Guideline was created to bridge the knowledge gap for perioperative nursing pain management and the urgent need to standardized evidence-based approach to the management of patients’ pain and comfort in all perianesthesia settings.</td>
</tr>
<tr>
<td>6) True</td>
<td>False</td>
<td>Observable changes in vital signs or behavioral expressions of pain will be present if the patient has severe pain.</td>
</tr>
<tr>
<td>7) True</td>
<td>False</td>
<td>A pain rating scale is appropriate for patients to use to rate their pain.</td>
</tr>
<tr>
<td>8) True</td>
<td>False</td>
<td>If the patient can be distracted from his pain this usually means he</td>
</tr>
</tbody>
</table>
does not have as high an intensity of pain as he indicates.

9) True  False  Patients may sleep in spite of severe pain.

10) True  False  After the initial recommended dose of opioid/narcotic analgesic, subsequent doses are adjusted in accordance with the individual patient's response.

11) True  False  There is a ceiling on the analgesia of morphine. In other words, beyond a certain dosage of morphine, increases in dosage will not increase pain relief.

12) True  False  The potency of the pain relief measure selected for the patient should be determined on the basis of known physical stimuli rather than the patient's report of pain intensity.

13) True  False  When a dose of morphine is safe but ineffective in relieving pain, clinical practice guidelines recommend increasing the dose by no more than 10%.

14) True  False  To prevent opioid induced respiratory depression, nurse monitoring of sedation level is more important than monitoring respiratory rate.

15) True  False  When morphine IV or IM is prescribed PRN for pain relief in the postoperative patient, the nurse must administer it only when the patient feels pain.
Appendix D
Evaluation for Educational Activity #1

1) This educational activity has improved my knowledge on pain and its management and has increased my familiarity with the ASPAN Pain and comfort guideline. (Circle one)

   Strongly Disagree   Disagree   Undecided   Agree   Strongly Agree

2) The content of the educational activity is consistent with the objectives. (Circle one)

   Strongly Disagree   Disagree   Undecided   Agree   Strongly Agree

3) Overall is this educational activity useful to you? (Circle one)

   Strongly Disagree   Disagree   Undecided   Agree   Strongly Agree
Appendix E

Case Study Presentation

Meet Jim F. He is 38 years old and owns his own landscaping business. He fell from a ladder while pruning a tree five years ago and has continuously suffered from low back pain since that time. He was initially prescribed oxycodone/acetaminophen and oxycodone SR for pain, but he became addicted. His wife divorced him as a result of his addiction and now she and their two sons live with her parents. Since he overcame his addiction, he has since been treated with gabapentin and has been clean for 2 years.

Jim was admitted to the emergency room (ER) due to left arm pain after the fall while skiing. The x-ray result in the ER revealed fracture of the left radius and ulna. Jim went to the operating room (OR) and had Open Reduction and Internal Fixation (ORIF) of the left radius and ulna. He was admitted to PACU after his surgery.

Past Medical History
- Hypertension
- Diverticulitis
- Peptic ulcer disease with GIB
- Gout
- No prior surgical history

Social History
- Smokes 1ppd x 30 years
- Recovering drug addict – oxycodone - has not used in 2 years.
- Drinks alcohol regularly on Sat nights.
- Owns landscaping business, divorced with 2 children
- Attends Narcotic Anonymous weekly.

Family History
- Father living: history of CAD, MI, DM, Glaucoma
- Mother deceased: lung cancer at age 67, was an alcoholic.

Current History
Allergies- NKDA
Labs:-
WBC 11.4 –
Hbg 12.5-
Hct 35.2 -
Plt 210,000-
Bun 21 - Cr. 0.9
Lytes and liver enzymes are all within normal limits

Post- Operative Course

Jims’ pain scores in the PACU were 9/10 after receiving doses of morphine 2mg IV x 5 doses, hydromorphone 0.4 IV x 5 doses, and 100mcg of fentanyl IV. He is not a candidate for a nerve block due to surgeon’s concern of compartment syndrome. He is drowsy, but easily arousable. He is able to move his left fingers, with good sensation, left fingers are warm to touch with adequate capillary refill. The goal for Jim is to keep his comfortable and will have a pain score of 5 or less before he will be transferred to the floor.


1. After your initial examination of Jim, which of the following orders would be appropriate for Jim?
   a. Elevate the left arm and application of heat to operative site.
   b. Give ketorolac 30 mg IV.
   c. Give lorazepam IV a total of 1mg. Give lorazepam 0.5mg as an initial dose.
   d. Give additional hydromorphone 0.4 mg IV x 5 doses.

Discuss what you think the right answer is and why.
Your answer: ________

Notes: ______________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Appendix F

Educational Activity 2

Title: Structured Communication: The SBAR

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>CONTENT(TOPIC)</th>
<th>TIME FRAME</th>
<th>METHODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the end of this presentation the learner will be able to: 1) Discuss the benefits of interpersonal communication in enhancing patient safety. 2) Identify the elements of SBAR model. 3) Apply SBAR communication technique specific to nurse and physician interaction.</td>
<td>1) Overview of communication in health care. 2) Barriers of Communication in health care. 3) Physician and nurse communication. 4) Elements of SBAR</td>
<td>40 minutes Breakdown: 1) Pre-test (5 minutes) 2) Power point presentation (15 minutes) 3) SBAR You-Tube video (5 minutes) 4) Role playing of scenarios (10 minutes) 5) Post-test survey and educational activity evaluation (5 minutes).</td>
<td>1) Power point presentation. 2) SBAR video from You Tube. 3) Role play scenarios specific to nurse physician interaction.</td>
</tr>
</tbody>
</table>
Appendix G

Pre Test Survey Educational Activity 2

<p>| | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1) True</td>
<td>False</td>
<td>When JCAHO (Joint Commission on Accreditation of Healthcare Organizations) studied the root causes of sentinel events, Communication breakdown was #3.</td>
</tr>
<tr>
<td>2) True</td>
<td>False</td>
<td>SBAR is only appropriate in clinical conversations.</td>
</tr>
<tr>
<td>3) True</td>
<td>False</td>
<td>When conveying the “S” section of the SBAR communication, it Should be as long as it takes to thoroughly communicate what you need.</td>
</tr>
<tr>
<td>4) True</td>
<td>False</td>
<td>JCAHO has a patient safety goal that specifies a hospital needs to have a standardized approach for hand-off communications.</td>
</tr>
<tr>
<td>5) True</td>
<td>False</td>
<td>Even though we are using SBAR, I still need to end my conversation with, “What questions do you have for me?”</td>
</tr>
</tbody>
</table>

6) Have you heard about SBAR communication method?
Appendix H

Posttest Survey Educational Activity 2

1) True  False  When JCAHO (Joint Commission on Accreditation of Healthcare Organizations) studied the root causes of sentinel events, communication breakdown was #3.

2) True  False  SBAR is only appropriate in clinical conversations.

3) True  False  When conveying the “S” section of the SBAR communication, it should be as long as it takes to thoroughly communicate what you need.

4) True  False  JCAHO has a patient safety goal that specifies a hospital needs to have a standardized approach for hand-off communications.

5) True  False  Even though we are using SBAR, I still need to end my conversation with, “What questions do you have for me?”
Appendix I

Evaluation Educational Activity 2

1) On a scale of 1 to 10 (with 1 not confident at all and 10 extremely confident), how confident are you that the SBAR process will improve patient safety?

<table>
<thead>
<tr>
<th>Not confident</th>
<th>Somewhat Confident</th>
<th>Extremely Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>10</td>
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</tbody>
</table>

2) On a scale of 1 to 10 (with 1 not confident at all and 10 extremely confident), how confident are you that you will implement the SBAR process in the future?

<table>
<thead>
<tr>
<th>Not confident</th>
<th>Somewhat Confident</th>
<th>Extremely Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>4</td>
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<td>9</td>
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<tr>
<td>10</td>
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</tbody>
</table>

Scenario 1:

J.B., DOB 2/2/85, a male was brought into the Emergency Department after sustaining gun-shot wounds to the left chest and abdomen. After a quick assessment and stabilization, JB was taken to the operating room, where the surgeons performed an exploratory laparotomy to determine the extent of the wounds. His diagnoses post-surgery, is exploratory laparotomy, splenectomy, left thoracotomy, and placement of a left chest tube. In the OR, JB was given fentanyl 350 mg IV, Midazolam 2 mg IV, Ketorolac 30 mg IV, Morphine 10mg IV. JB is extubated and taken to the post anesthesia care unit (PACU). While in the PACU, JB woke up 15 minutes later, and reports 10/10 for pain. He was given hydromorphone 0.4mg IV x 4 doses as ordered. His BP is 160/95, HR 120, RR 20, T- 100.1. Pain reassessment after the dose of hydromorphone is still 10/10, he is restless and diaphoretic.

Exercise:

You are the nurse and need to inform the anesthesia attending in the PACU about JB’s condition. You think that the patient is in need of immediate attention from the anesthesia attending. Use SBAR to convey this information to the anesthesia attending.

Scenario 2:

M.A., DOB 12/3/43, was admitted to the ER from a retirement community where she has resided for the last 2 years. She apparently fell and sustained a right hip pain. X-ray was done in the ER and she had right hip fracture as confirmed by x-ray. A right ORIF (Open Reduction
Internal Fixation) surgery was done. In the OR, she was given Fentanyl 250 mcg IV; Morphine 8mg IV; Midazolam 1mg IV. She was admitted to PACU after surgery. Her vital signs are: BP 178/90 HR 120 RR 28 T 99.6 Oxygen Sat 95 on 4 liters shovel mask. She is awake, confused, and able to move all her extremities spontaneously. She is constantly moaning, and has some muscle stiffness. When she asked if she is in pain, she does not answer and continues to moan. She was given Morphine 10mg IV and Hydromorphone 0.4mg IV X 5 doses as previously ordered and did not alleviate her pain. She consented for a block pre-op, but anesthesia attending wanted to wait to do it post op if the need arose.

Exercise:

You are Ms. Brown’s nurse and want to call the physician about MA’s pain issue SBAR to convey this information to the physician.
Appendix K
SBAR

SBAR

Situation:
- What is going on with the patient? (One sentence description of need).

Background:
- Overview of the patient's background: post op, date of admission, prior procedures, current medications, allergies, pertinent laboratory results and other relevant diagnostic results.
- For this, you need to have collected information from the patient's chart, flow sheets and progress notes.

Assessment:
- What do I think the problem is?
- Vital signs; clinical impressions, concerns
- You need to think critically when informing the doctor of your assessment of the situation. This means that you have considered what might be the underlying reason for your patient's condition.
- If you do not have an assessment, you may say: “I’m not sure what the problem is, but I am worried.”

Recommendation
- What do I think needs to be done for the patient?
- Explain what you need - be specific about request and time frame
- Make suggestions; Clarify expectations
- Finally, what is your recommendation? That is, what would you like to happen by the end of the conversation with the physician?
- Any order that is given on the phone needs to be repeated back to ensure accuracy.
### Appendix L

*Based upon the Johns Hopkins Hospital/The John Hopkins University Research & Non-Research Evidence Appraisal (2012)*

<table>
<thead>
<tr>
<th>Citation</th>
<th>Sample and Location Research/Study Was Performed</th>
<th>Design</th>
<th>Outcomes/Results of the Intervention and/ or Objectives of the Study</th>
<th>Strengths and Weaknesses</th>
<th><em>Evidence Level Class</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Al-Shaer, D., Hill, P., &amp; Anderson, M. (2011).</td>
<td>Convenient sample of 129 registered nurses (RNs) from 10 separate nursing units in a mid-western metropolitan hospital.</td>
<td>Non-experimental, descriptive design</td>
<td><strong>Objective:</strong> To identify the nurses’ knowledge regarding pain assessment and intervention. <strong>Outcome:</strong> Out of the overall participants (N=129) nurses; (N=79) or 61.2% received a letter grade of B or better on the modified Nurses’ Knowledge and Attitude Survey Regarding Pain (NKAS [32 item questions on assessment, pharmacologic and non-pharmacologic intervention]). The study suggested that nurses have above average in their knowledge of pain assessment; however, there is a lack of knowledge regarding questions on pharmacologic interventions (greater than 60% of nurses have incorrect responses).</td>
<td>Strength: The result of the study was consistent with the extensive literature review mentioned in the study. <strong>Weakness:</strong> The convenience sample did not allow for generalizability of the study results and the sample size was limited. Data collection was conducted in winter months in the Midwest and inclement weather may have influenced the attendance of the participants.</td>
<td>III B</td>
</tr>
<tr>
<td>Matthews, E., &amp; Malcom, C. (2007).</td>
<td>Convenient sample of two groups from (N=65) RNs at Withers Orthopedic Center, Musgrave Park Hospital; Green Park Health Care Trust , UK</td>
<td>Prospective comparative study design</td>
<td><strong>Objective:</strong> To examine the knowledge and competency of (Group 1) orthopedic RNs who completed knowledge and training competency program against (Group 2) RNs from a different range of clinical background who were attending pain conference and had not completed the knowledge and competency training program. <strong>Outcome:</strong> There was no significant difference in the total correct responses between the 2 groups. Although there was a severe deficit in knowledge relating to questions about pharmacologic interventions and pharmacological methods of treating pain.</td>
<td>Strength: The results of the study were consistent with the findings of other studies regarding deficits in nurses’ knowledge and attitudes and clinical practices regarding pain management. <strong>Weakness:</strong> The nurses in two groups may not be representative of practicing nurses. Likewise the sample was limited and convenient sample did not allow for generalizability of study results.</td>
<td>III B</td>
</tr>
<tr>
<td>Lui, L., So, W., &amp; Fong, D. (2008).</td>
<td>A self – administered survey (N=143) RNs working in a medical unit in a public hospital in Hong Kong</td>
<td>Cross sectional study design</td>
<td><strong>Objective:</strong> To investigate the knowledge levels &amp; attitudes regarding pain management among nurses working in medical units and factors that might influence their knowledge and attitudes. <strong>Outcome:</strong> A deficit in knowledge and attitudes related to pain management was prominent (47.22%). There were also discrepancies in knowledge and attitudes among nurses.</td>
<td>Strength: The outcomes of The study were consistent with the literature on knowledge about pain management and attitudes which underpin nurses’ pain management decisions are problematic. <strong>Weakness:</strong> Small sample size &amp; study was done in one unit which did not enhance generalizability.</td>
<td>III B</td>
</tr>
<tr>
<td>Bernardi, Catania &amp; Tridello (2008).</td>
<td>Nationwide survey (N=66) hospice nurses from 9 medical units located in northern, central and southern Italy</td>
<td>Descriptive Study</td>
<td><strong>Objective:</strong> To examine the knowledge and attitudes of Italian hospice nurses concerning cancer pain management and to determine the predictor of nurses’ pain management knowledge. <strong>Outcome:</strong> Among 39 questions examined, 17 received less than 60% of the correct answer rate. Further analysis showed 30% of hospice nurses underestimated the patients’ pain and did not treat the pain in a correct way.</td>
<td>Strength: The results strongly support the importance and usefulness of pain recognition the estimation of &amp; as well as the management of pain relief education consistent with previous studies. <strong>Weakness:</strong> Smaller sample size limits generalizability.</td>
<td>III B</td>
</tr>
<tr>
<td>Aziato, L., &amp; Adejumo, O.</td>
<td>14 Ghanaian RNs (25-65 years old) from a tertiary teaching hospital (Kurlebu Teaching</td>
<td>Ethnographic design a qualitative methodology</td>
<td><strong>Objective:</strong> To explore the factors that accounted for Ghanaian RNs’ inadequate knowledge of postoperative pain management. <strong>Outcome:</strong> Inadequate knowledge in pain</td>
<td>Strength: The results of the study were consistent with the literature that identified inadequate knowledge on pain management among</td>
<td>III B</td>
</tr>
<tr>
<td>Study</td>
<td>Setting</td>
<td>Participants</td>
<td>Design</td>
<td>Objective</td>
<td>Strengths</td>
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<tr>
<td>Al-Khawalde, O., Al-Hussami, M., &amp; Darawad, M. (2013).</td>
<td>240 Baccalaureate nursing students in 3 governmental hospitals in Jordan</td>
<td>Quantitative descriptive cross-sectional survey design</td>
<td>To explore current knowledge &amp; attitudes regarding pain management among baccalaureate nursing students &amp; the factors that might influence such knowledge &amp; attitudes &amp; nursing students perceived barriers to adequate pain management during clinical practice.</td>
<td>Strength: Findings of the study support the previous research findings related to the problem or inadequate pain management among nursing students. Weakness: Cross-sectional descriptive study design only provides significant linkages between study variables, not casualities. Convenience sample limits to the ability to generalize these findings to other populations. Use of self-reported instruments is another limitation.</td>
<td>III B</td>
</tr>
<tr>
<td>Duke, G., Haas, B., Yarbrough, S., &amp; Northam, S. (2013).</td>
<td>162 junior &amp; senior baccalaureate nursing students &amp; 16 nursing faculty in Texas</td>
<td>Descriptive design</td>
<td>To determine the knowledge of &amp; attitudes towards pain among baccalaureate &amp; faculty to establish a foundation of systematic &amp; comprehensive integration of pain content in the curricula.</td>
<td>Strength: The results were consistent with the previous studies primarily related to knowledge of medications. Weakness: Non-probability sampling was used thus generalizability maybe affected.</td>
<td>III B</td>
</tr>
<tr>
<td>Moceri, J., &amp; Drevdahl, D. (2012).</td>
<td>91 emergency room RNs in 5 U.S. ED</td>
<td>Descriptive design</td>
<td>To investigate the ED RNs' knowledge and attitudes about pain.</td>
<td>Strength: The result of the recent survey was comparably or better than the participants in other studies using KASRP. Findings from this study underscore the Institute of Medicine’s Pain in America recommendation to increase pain management education to all providers. Weakness: Convenience sample was used and was not representative of RNs across the U.S.</td>
<td>III B</td>
</tr>
<tr>
<td>McNamara, M., Harmon, D., &amp; Saunders, J. (2012).</td>
<td>59 RNs attending educational program on acute pain management conducted by Center of Nurse and Midwifery Education and Acute Pain Service at Midwestern Regional Hospital in Ireland</td>
<td>Experimental approach (mixed method)</td>
<td>To assess the effectiveness of an acute pain educational program in improving the nurses’ knowledge, skills &amp; attitudes around postop pain management.</td>
<td>Strength: The result of the study could guide the development and implementation of continuing education program for nursing staff in providing evidenced-based pain management. Weakness: Lack of randomization.</td>
<td>II B</td>
</tr>
<tr>
<td>Ho, S., Ho, C., Pang Yuen, H., Lexshimi, R., &amp; Choy, Y. (2013).</td>
<td>84 RNs in urban hospital at Kuala Lumpur, Malaysia</td>
<td>Descriptive design</td>
<td>To determine the knowledge &amp; attitudes of nurses related to pain management.</td>
<td>Strength: This most recent study using KASRP demonstrated impressive scores on nurses’ knowledge and attitudes.</td>
<td>III B</td>
</tr>
<tr>
<td>Nimbalkar, Dongara, Ganijwale, &amp; Nimbalkar, (2013)</td>
<td>351 nursing staff at a rural tertiary hospital in India</td>
<td>Descriptive design</td>
<td>Objective: To assess the knowledge &amp; perception regarding pain among RNs and to determine whether varying clinical exposure to painful procedures in children had any association with their pain perception. Outcome: 60% had complete knowledge of all the basic questions asked. Only 3.1% answered all 5 advanced questions correctly, while 96.9% had answered more than 1 question incorrectly.</td>
<td>Weakness: Lack of randomization.</td>
<td>III B</td>
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<td>(Fabrigar, Smith, Petty, &amp; Crites, 2006).</td>
<td>Participants of 3 experiments were undergrad students enrolled in introductory psychology course at Queens University Experiment 1- 550 Experiment 2-456 Experiment 3-310</td>
<td>Experimental study</td>
<td>Objective: To explore the role of properties of attitude-relevant knowledge in attitude behavior consistency in 3 experiments. Outcomes: Experiment 1: Attitudes based on behaviorally relevant knowledge predicted behavior than attitudes based on low-relevance knowledge. Experiment 2: Attitudes predicted behavior well regardless of complexity under high behavioral relevance. Experiment 3: Findings of experiment 2 were replicated.</td>
<td>Strength: Adequate randomized sample. Weakness: Attitude behavior consistency research, knowledge has always been measured rather than experimentally manipulated...</td>
<td>I A</td>
</tr>
<tr>
<td>Stanley, M., &amp; Pollard, D. (2013).</td>
<td>25 RNs from a regional hospital in western &amp; Southeast North Carolina</td>
<td>Cross-sectional correlational design</td>
<td>Objective: To examine the level of knowledge of pediatric pain management, the attitudes of nurses, &amp; self-efficacy. To investigate the relationship between years of experience and the levels of knowledge &amp; attitudes &amp; self-efficacy. Outcome: There was no statistically significant relationship between knowledge and self-efficacy (p=.0853) or knowledge and years of nursing experience (p=0.822). Although there was a statistically significant relationship between the level of knowledge and the years of pediatric experience (p=0.05) and knowledge and membership of professional organization (p=0.004).</td>
<td>Strength: Findings of this study were mostly consistent with the previous studies. Weakness: Small and convenient probability sample was used.</td>
<td>III B</td>
</tr>
<tr>
<td>Abrahamson, K., Fox, R., &amp; Doebbeling, B. (2012).</td>
<td>575 RNs from 134 Veterans Affairs medical center nationwide</td>
<td>Metasynthesis (conventional content analysis of data)</td>
<td>Objective: To study the nurses’ perceptions of facilitators &amp; barriers to the use of clinical practice guidelines (CPG). Outcome: Majority of identified facilitators &amp; barriers to nurses’ use of CPG were (external- with emphasis on social&amp; organizational factors). These were: categories of communication, education (orientation, training), time, staffing and workload</td>
<td>Strength: The findings of the study support those of earlier studies which indicated that social and organizational factors are critical to effective guideline implementation and use. Weakness: Results may not be generalizable since it only involves nurses working with in VA system. Analyzed responses only reflected the views of those nurses who completed the survey.</td>
<td>III A</td>
</tr>
<tr>
<td>American Society of Anesthesiologists Task Force on Acute Pain Management (2012)</td>
<td>Not applicable</td>
<td>Non-research-Clinical Practice Guideline</td>
<td>Not applicable</td>
<td>Strength: Appropriate stakeholders were involved in the development of the guideline. Recommendations were clearly stated.</td>
<td>IV A</td>
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<tr>
<td>Shekelle &amp; Fletcher, 2013</td>
<td>Not applicable</td>
<td>Expert opinion/literature review</td>
<td>Not applicable</td>
<td>Strength: Topic was clearly presented and is updated as new evidence becomes available.</td>
<td>V A</td>
</tr>
<tr>
<td>Francke, A., Smit, M., JE de Veer, A., &amp; Mistiaen, P. (2008).</td>
<td>12 systematic reviews</td>
<td>Literature review</td>
<td>Objectives: To gain understanding of the factors influencing guideline implementation. To provide insight into the “state of the art” regarding research within this field. Outcome: Substantial proportion of the literature was focused on pain management.</td>
<td>Strength: Conclusions were definitive. Weakness: Search for potentially illegible publications ceased in</td>
<td>V B</td>
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<td>Title</td>
<td>Methodology</td>
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<td>Strength</td>
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<td>Medves, J., Godfrey, C., Turner, C., Paterson, M., &amp; Harrison, M.</td>
<td>Initial search using AMED, CINAHL, Cochrane Database of Systematic Reviews, Centre of reviews and Dissemination (CRD), EMBASE, ERIC, Health star, MEDLINE, PsycINFO, Clinical Pharmacology, Clinical Reference Systems, Current Contents, Biomed Central, PubMed, Turning Research into Practice. The time period was from 1994 to 2007. Revealed 12,083 articles of which 88 met the criteria.</td>
<td><strong>Objective</strong>: To synthesis literature relevant to guideline dissemination and implementation strategies for health care teams &amp; team-based practice. <strong>Outcome</strong>: Multiple approaches using teams of health care providers were reported to be statistically significant results in knowledge, practice and outcome for 72.7%.</td>
<td><strong>Strength</strong>: Search strategies were specified, design, methods &amp; analysis were clearly presented. <strong>Weakness</strong>: It is based on a specific topic and in order to synthesize the information the balance between inclusion and exclusion has to be set a priori to ensure the protocol is replicable. Although, there may be many studies that examine the effect of team use of guidelines with positive or negative outcomes that were not included as the discussion of implementation and/or dissemination was excluded.</td>
<td>IV A</td>
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<tr>
<td>Helfrich, C., Damschroder, L., Hagedorn, H., Dagget, G., Sahay, A., &amp; Ritchie, M.</td>
<td>Qualitative, critical synthesis of peer-reviewed PARIHS literature published through March 2009 using PubMed &amp; CINAHL. 24 articles met the criteria. Findings were synthesized through a three-step process using semi-structured data abstraction tools and group consensus.</td>
<td><strong>Objective</strong>: To critically review and synthesize the literature on The Promoting Action on Research Implementation in Health Services (PARIHS) &amp; to understand how it has been used and operationalized. To highlight its strengths and limitations. <strong>Outcome</strong>: Empirical articles generally used PARIHS as an organizing framework for analyses. No studies used PARIHS prospectively to design implementation strategies, and there was generally a lack of detail about how variables were measured or mapped, or how conclusions were derived.</td>
<td><strong>Strength</strong>: Reasonably thorough appropriate search, strength and limitations were included in the studies. <strong>Weakness</strong>: Important work relating to PARIHS may have missed since 'gray' or unpublished literature or publications in languages other than English were not assessed. The review of literature was focused exclusively on the PARIHS framework, and not on literature regarding other frameworks that may include similar or related constructs.</td>
<td>IV B</td>
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<tr>
<td>Titler, M. (2008).</td>
<td>Evidence-based handbook for nurses.</td>
<td>Not applicable</td>
<td><strong>Strength</strong>: Topic was clearly presented with precise conclusion.</td>
<td></td>
<td>V A</td>
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<tr>
<td>Forsner, T., Hansson, J., Brommels, M., Wistedt, A., &amp; Forsell, Y.</td>
<td>28 health care team members from 2 general psychiatric outpatient clinic in Stockholm, Sweden</td>
<td><strong>Objective</strong>: To determine the perceived facilitators and barriers to guideline implementation and clinical compliance to guidelines for depression and psychiatric care. <strong>Outcome</strong>: 3 major barriers to guideline implementation: (1) organizational resources, (2) health care professionals individual characteristics and (perception of guidelines and implementation strategies, were identified.</td>
<td><strong>Strength</strong>: Interviews were reported from participants in a real life implementation project that included multifaceted implementation strategy. <strong>Weakness</strong>: Small sample size.</td>
<td>III B</td>
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<tr>
<td>Dulko, Hertz, Julien, Beck, &amp; Mooney (2010)</td>
<td>8 NPs &amp; 2 groups of 96 patients at the urban comprehensive cancer center</td>
<td><strong>Objective</strong>: To evaluate the effect of audit/feedback (A/F) intervention on nurse practitioner (NP) implementation of cancer pain CPGs and on hospitalized patients’ self-report of pain and satisfaction with pain relief. <strong>Outcome</strong>: Nurse practitioner adherence to CPGs increased during A/F. Pain intensity did not significantly differ between groups of patients.</td>
<td><strong>Strength</strong>: The results of study suggested that A/F along with provider education is effective intervention to increase compliance with established CPGs. <strong>Weakness</strong>: Study was only conducted on services that</td>
<td>III B</td>
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<td>Authors</td>
<td>Book/Handbook</td>
<td>Methodology</td>
<td>Strength</td>
<td>Weakness</td>
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<td>O'Daniel &amp; Rosenstein (2008)</td>
<td>Evidence-based handbook for nurses.</td>
<td>Literature Review</td>
<td><strong>Strength:</strong> Topic was clearly presented with precise conclusion</td>
<td><strong>Weakness:</strong> Predominantly NP managed and small sample size</td>
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<tr>
<td>Ellis, McCleary, Blouin, Due, &amp; Rowley (2007)</td>
<td>336 RNs &amp; 8 MDs in a pediatric hospital</td>
<td>Pre-test and post-test design</td>
<td><strong>Objective:</strong> To evaluate implementation of comprehensive program to improve pain management practices in pediatric hospital. <strong>Outcome:</strong> Positive changes occurred in the use of pain scales and valuing good pain management</td>
<td><strong>Strength:</strong> There were positive changes in the use of pain scale thus, improving pain management. <strong>Weakness:</strong> Convenient sample. Study was based on self-reported questionnaires.</td>
<td></td>
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<tr>
<td>Brondal, K., &amp; Halldorsdottir, S. (2012)</td>
<td>Pain Management: Current Issues and Opinions textbook</td>
<td>Literature Review</td>
<td><strong>Strength:</strong> Topic was clearly presented.</td>
<td><strong>Weakness:</strong> V B</td>
<td></td>
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<tr>
<td>The Victorian Quality Council. (2010)</td>
<td>Booklet: Promoting Effective Communication Among Healthcare Professional to Improve Patient Safety and Quality</td>
<td>Literature Review</td>
<td><strong>Strength:</strong> Topic was clearly presented.</td>
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**Pharmacologic Management**

**Non-Opioids use in the PACU**
- Acetaminophen functions via inhibition of cyclooxygenase producing effective analgesia as well as antipyretic effect.
- NSAIDs inhibit cyclooxygenase and have powerful peripheral anti-inflammatory properties. Ketorolac, which causes only minor gastrointestinal effects, has been a useful non opioid adjunct in managing acute pain in PACU.

**Non-Pharmacologic Management**
- Cognitive methods
  - Deep breathing, meditation, imagery, music and distraction or focusing attention away from pain.
- Physical techniques
  - Massage, repositioning as well as heat and cold application.

**Pharmacologic Management**

**Regional Analgesia use in the PACU**
- Brachial plexus, lumbar plexus, femoral, saphenous and sciatic nerve blocks are common regional anesthetics. They are superior to opioids in the management of postoperative pain especially in the orthopedic population.
- The ASA Task Force on Acute Pain Management guidelines, clearly endorsed a multimodal approach including regional analgesia.

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**Harmful Effects of Pain**
- Increase hospital length of stay.
- Delayed ambulation.
- Compromised prognosis and higher morbidity and mortality.
- Development of chronic pain.
- Can generate an economic burden resulting from direct costs due to excess health-care resource use.
- Indirect costs due to reduced patient functionality and productivity.

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**Pharmacologic Management**

**Opioids use in the PACU**
- Morphine is the universal opioid for acute pain management. It is a parenteral opioid and the standard to which all other opioids are compared. The hydrochloric acid component of morphine produces a 20 minutes analgesic efficacy as well as slow onset and intermediate duration of activity. It has a 3-5 minute onset and a half-life of 3 hours and duration of 4-6 hours. When morphine is used, blood levels usually reach the peak in 15-20 minutes and levels of activity from 20-60 minutes. It has a longer duration of action than fentanyl (15-30 minutes).
- Hydromorphone is a prodrug morphine that is 4-6 times more potent and has an intermediate duration of action (45 minutes).
- Fentanyl is a synthetic opioid that is 50-60 times more than morphine. It has a rapid onset of action (10 seconds) with a short duration of action (30-60 minutes). Fentanyl can be very effective in PACU settings.
IMPROVING NURSES’ PAIN MANAGEMENT IN PACU

ASPAN Pain and Comfort Guideline

- Was created to bridge the knowledge gap for perioperative nursing pain management and the urgent need to standardize evidence-based approach to the management of patients’ pain and comfort in all peri-anesthesia settings.
- It was developed in response to the Joint Commission’s mandate that every patient has the right to effective and safe pain management.

ASPAN Pain and Comfort Guideline

- Is based on Kolecinski’s work which provides a logical, systematic approach to providing comfort care for peri-anesthesia patients.
- It defines the purpose, resources, education, performance improvement parameters, and pathway documentation necessary for safe and effective management of pain and comfort in peri-anesthesia patients, by recommending methods for evaluating performance and implementing improvements in practice.

ASPAN Pain and Comfort Guideline

- Post-anesthesia Phase 1 is comprised of the following:
  - Assessment
  - Interventions
  - Expected Outcomes

ASPAN Pain and Comfort Guideline

- Assessment
  - Pain History
  - Pain Behaviors or expression
  - Analgesic history
  - Patient preferences
  - Educational needs
  - Laboratory results
  - Vital Signs

ASPAN Pain and Comfort Guideline

- Interventions
  - Pharmacologic
    - Mild to moderate pain (1-3)
      - Non-steroidal Antinflammatory drugs (NSAIDS, COX2 Inhibitors)
        - May consider opioids unless contraindicated.
    - Moderate to severe pain (4-6)
      - Multi-modal therapy (combination of opioid & non-opioid)
    - Severe pain (7-10)
      - Alpha agonist opioids: sufentanil, hydromorphone & fentanyl

ASPAN Pain and Comfort Guideline

- Interventions
  - Pharmacologic
  - Adjuncts:
    1. Multi-purpose for chronic pain (neuropathic pain, TCA’s, antidepressants, anti-emetics)
    2. Neuropathic continuous pain use antidepressants, oral or local anesthetics
    3. Pain orthopedic surgery, consider muscle relaxant if patient experiences muscle spasm
ASPN Pain and Comfort Guideline

Interventions
- Pharmacologic
  - Initiate and adjust IV and regional infusions (PCA) as indicated and ordered.

ASPN Pain and Comfort Guideline

Expected Outcomes
- Patient maintains hemodynamic stability
- Patient verbalizes evidence of meeting pain level and increased comfort with pharmacologic and non-pharmacologic interventions.
- Patient shows effective use of at least one non-pharmacologic method.
- Patient shows effective use of Patient Controlled Analgesia (PCA) as indicated and verbalizes the positive results of regional techniques of pharmacological pain management.

Case Presentation

Meet Jim F. He is 58 years old and owns his own landscaping business. He fell from a ladder while pruning a tree five years ago and has frequently been referred to acute back pain since that time. He was recently prescribed low-back and percutaneous epidural injections. He suffers from ongoing back pain, which has worsened in the past year. He is currently seeing a pain management specialist for the treatment of his addiction and has been sober for two years. He and his wife have two young sons with whom he enjoys spending time. Since he stopped using narcotics, he has been able to care for his children and has been clean for 2 years.

Jim was admitted to the operating room (OR) due to left arm pain after the fall while working. The x-rays revealed a left radial shaft fracture of the left radius and ulna. Jim went to the operating room (OR) and had Open Reduction and Internal Fixation (ORIF) of the left radius and ulna. He was admitted to PACU after his surgery.

Case Presentation

- Past Medical History
  - Hypertension
  - Diabetes
  - History of drug abuse
  - No prior surgical history

- Social History
  - Two siblings - one deceased, one 2 years.
  - Five children: one deceased, two children with 3 children
  - Arrested for narcotics

- Family History
  - Father living history of CAD, MI, DM, Glaucoma
  - Mother deceased: lung cancer at age 67, was an alcoholic.

- Current History
  - Allergies: NKDA
  - Labs:
    - WBC: 11.4
    - Hgb: 12.3
    - Hct: 35.2
    - Peb 210,000
    - BUN 11
    - G.: 0.9
    - Lysis and liver enzymes are all within normal limits.
Case Presentation

Post-Operative Course

Jim’s pain scores in the PACU were 9/10 after receiving doses of morphine 2mg IV x 5 doses, hydromorphone 0.4 IV x 5 doses, and 100mcg of fentanyl IV. He is not a candidate for a nontoxic due to surgeon’s concern of compartment syndrome. He is drowsy, but easily arousable. He is able to move his left fingers, with good sensation, left fingers are warm to touch with adequate capillary refill. The goal for Jim is to keep him comfortable and will have a pain score of 3 or less before he will be transferred to the floor.


Reference

After your initial examination of Jim, which of the following orders would be appropriate for Jim?

a. Give morphine 20 mg IV
b. Give hydromorphone 0.4 mg IV as an initial dose
c. Give additional fentanyl 50 ng IV x 3 doses.

Discuss what you think the right answer is and why.

Your answer:

Notes:
SBAR
(Situation, Background, Assessment, Recommendation)

EFFECTIVE COMMUNICATION FOR PATIENT SAFETY

SARITA WARREN, RN
UNIVERSITY OF MASSACHUSETTS, AMHERST

Objectives
At the end of this presentation the learner will be able to:
1) Discuss the benefits of interpersonal communication in enhancing patient safety.
2) Identify the elements of SBAR model.
3) Apply SBAR communication technique specific to nurse and physician interaction.

Overview of Communication in Healthcare
- From 1995 – 2005 JCAHO reviewed over 2537 sentinel events in General Hospitals and Emergency Departments
- Communication issues identified as being the root cause and the major contributor in these events
- In 2005 nearly 70% of sentinel events, the root cause was communication.

Why Does Communication Breakdown?
- Different communication styles
- High level of activity
- Frequent interruptions
- No standardization in organizing essential information
- Loss of information

What Can Go Wrong?
- CONCERN was communicated - BUT:
  - PROBLEM: was not clearly stated
  - PROPOSED ACTION: didn’t happen
  - DECISION: was not reached
Physician-RN Communication

- Differences in:
  - Training and practice
  - Style of communication
  - Past experience
  - Level of empowerment
  - Tone of voice and level of respect

Physician-RN Communication Styles

- Nurses are narrative and descriptive
- Physicians are guided to be problem solvers—"Just the facts please"
- Other complicating factors
  - Leader, status differences
  - Prior relationships, hierarchy
  - Perceptions of teamwork depend on point of view

A Search for a Solution

- Healthcare has turned to other industries to find an effective solution for this age-old problem.
- One such solution was found in a communication model used by the Navy in their submarine division.
- This model is called SBAR

What is SBAR?

- The SBAR model is a simple method to help standardize communication
- SBAR allows all parties to have common expectations:
  - What is going to be communicated
  - How the communication is structured
  - Required elements
- Focuses on the problem, not the people

Who Promoted SBAR?

- The Joint Commission
- Institute for Healthcare Improvement
- Advisory Board Company
- The World Health Organization (WHO)

Why Use SBAR?

- To reduce the barrier to effective communication across different disciplines and levels of staff.
- SBAR creates a shared mental model around all patient handoffs and situations requiring escalation, or critical exchange of information (handovers).
- SBAR is memory prompt, easy to remember and encourage proper preparation for communication.
- SBAR reduces the incidence of mixed communications.
**How Can SBAR Help Me?**

- Easy to remember
- Clarifies what information needs communicating quickly
- Points to action

_prevents “hinting” and “hoping”._

**S – B – A – R**

- **SITUATION**
  - State: your name and unit
  - I am calling about: (Patient Name & Bed Number)
  - The problem: The reason I am calling...

- **BACKGROUND**
  - State the procedure, type of anesthesia, significance during the case
  - State the pertinent medical history
  - A Brief Synopsis of the treatment to date

- **ASSESSMENT**
  - Pertinent objective & subjective information related to the problem
    - Most recent vital
    - Mental status
    - Respiratory rate and quality
    - B/P, pulse rate & quality
    - Pain
    - Neuro changes
    - Skin color
    - Rhythm changes

- **RECOMMENDATION**
  - State what you would like to see done:
    - Change treatment?
    - Come to see the patient at this time?
    - Talk to the family and patient about...
    - Ask for a consulting physician to see the patient?
    - Transfer the patient?
RECOMMENDATION

• Other suggestions
  ○ CBC
  ○ ABG
  ○ BMP
  ○ O2sat

• If a change in treatment is ordered, ask:
  "How often?"

• Ask: "If the patient does not improve, when would you want to be called again?"

EXAMPLE

• Situation:
  ○ Dr. Jones, I'm calling about Mr. Smith who has a pain level of 10/10 on pain scale.

• Background:
  ○ Mr. Smith is a 56 year old male with right ankle fracture. He has had general anesthesia. He was given 300 mg of fentanyl, 10 mg of morphine in the OR. In PACU, he had 10 mg of morphine as nausea. He does not take pain medication at home. He did not have a nerve block pre-op.

EXAMPLE

• Assessment:
  ○ He is very restless, diaphoretic, extremities rigid, hands in fists.
  ○ HR 135, RR 30, BP 170/90 (baseline is 120/80). O2 sat
  ○ 97% on 2L nO2.

• Recommendation:
  ○ I think he needs a muscle relaxant (atracort PD). If this does not work, may I just double dose of mg hydroxyzine? He is also a candidate for a nerve block pre-op.

Communication Handoffs

SBAR
Is an effective tool for all types of communication handoffs.

Summary

• SBAR saved time for patients, physicians, and staff.
• SBAR was a clear way to communicate.
• SBAR avoided staff/physician frustration.
• Incorporating SBAR may seem simple, but it takes considerable training.

Reference

• National Institute for Innovation and Improvement (2013). Retrieved at:
  http://www.institute.nhs.uk/safer_care/safer_care/SBAR_Resources.html#Presentation
• The Valley Hospital (SBAR) (n.d.). Retrieved at:
  www.valleymosmed.com/ppt/SBABPowerpoint.ppt
• Sharp HealthCare (2007)
  http://www.sharphc.com/hsdStudents/upload/SBARSelfTeach.pdf
ASPAN Pain and Comfort
Clinical Guideline

Preoperative Phase

Assessment

1. Vital signs including pain and comfort goals
   (e.g., 0 to 10 scale)
2. Medical history
   (e.g., neurologic status, cardiac and respiratory instability, allergy to medication, food and objects, use of herbs, motion sickness, sickle cell, fibromyalgia, use of caffeine/substance abuse, fear, and anxiety)
3. Pain history
   (e.g., pre-existing pain, acute, chronic, pain level, pattern, quality, type of source, intensity, location, duration/time, course, pain effect, and effects on personal life)
4. Pain behaviors/expressions or history
   (e.g., grimacing, frowning, crying, restlessness, tension, and discomfort behaviors [e.g., shivering, nausea, and vomiting]. Note that physical appearance may not necessarily indicate pain/discomfort or its absence.)
5. Analgesic history
   (type [i.e., opioid, non-opioid, and adjuvant analgesics], dose, frequency, effectiveness, adverse effects, other medications that may influence choice of analgesics [e.g., anticoagulant, antihypertensive, muscle relaxants])
6. Patient's preferences
   (e.g., for pain relief/comfort measures, expectations, concerns, aggravating and alleviating factors, and clarification of misconceptions)
7. Pain/comfort acceptable levels

(e.g., patient and family [as indicated] agree to plan of treatment/interventions postoperatively)
8. Comfort history
   (i.e., physiological, sociocultural, psychospiritual, and environment [e.g., spiritual beliefs/symbols, warming measures, music, comfort objects, privacy, positioning, factors related to nausea/vomiting])
9. Educational needs
   (i.e., consider age or level of education, cognitive and language appropriateness, and barriers to learning)
10. Cultural language preference, identification of personal beliefs, and resulting restrictions
11. Pertinent laboratory results
   (e.g., prolonged prothrombin time [PT], partial thromboplastin time [P TT], and abnormal international normalized ratio [INR] and platelet count to determine risk for epidural hematoma in patients with epidural catheter)

Interventions

1. Identify patient, validate physician's order and procedure
   (i.e., correct name of drug, dose, amount, route, and time, and validate type of surgery and correct surgical site as applicable)
2. Discuss pain and comfort assessment
   (i.e., presence, location, quality, intensity, age, language, condition, and cognitively appropriate pain rating scale [e.g., 0 to 10 numerical scale or FACIT scale] and comfort scale. Assessment method must be the same for consistency)
3. Discuss with patient and family (as indicated) information about reporting pain intensity using numerical or FACIT rating scales and available pain

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relief and comfort measures (include discussion of patient's preference for pain and comfort measures; implement comfort measures; (ie, physiological, sociocultural, spiritual, environmental support as indicated by patient))

4. Discuss and dispel misconceptions about pain and pain management

5. Encourage patient to take a preventive approach to pain and discomfort by asking for relief measures before pain and discomfort are severe or out of control

6. Educate purpose of intravenous or epidural patient-controlled analgesia (PCA) as indicated; educate about use of nonpharmacologic methods (eg, cold therapy, relaxation breathing, music)

7. Discuss potential outcomes of pain and discomfort treatment approaches

8. Establish pain relief/comfort goals with the patient...
   (eg, a pain rating of less than 4 [scale of 1 to 10] to make it easy to cough, deep breathe, and turn); premedicate patients for sedation, pain relief, comfort (eg, non-opioid, opioid, antiemetics as ordered; consider needs of chronic pain patients)

9. Arrange interpreter throughout the continuum of care as indicated

10. Utilize interventions for sensory-impaired patients (eg, device to amplify sound, sign language, and interpreters)

11. Report abnormal findings including laboratory values (prolonged PT/PTT and abnormal INR and platelet count among epidural patients)

12. Arrange for parents to be present for children

Expected Outcomes

1. Patient states understanding of care plan and priority of individualized needs

2. Patient states understanding of pain intensity scale, comfort scale, and pain relief/comfort goals

3. Patient establishes realistic and achievable pain relief/comfort goals (eg, a pain rating of less than 4 [scale 0 to 10] to make it easier to cough, deep breathe, and turn upon discharge)

4. Patient states understanding or demonstrates correct use of PCA equipment as indicated

5. Patient verbalizes understanding of importance of using other nonpharmacologic methods of alleviating pain and discomfort (eg, cold therapy, relaxation breathing, music)

Postanesthesia Phase I

Assessment

1. Refer to preoperative phase assessment, interventions, and outcomes data

2. Type of surgery and anesthesia technique, anesthetic agents, reversal agents

3. Analgescics (ie, non-opioid, opioid, adjuvants given before and during surgery, time and amount at last dose, and regional [eg, spinal/epidural])

4. Pain and comfort levels on admission and until transfer to receiving unit or discharge to home (Ceases frequently until pain or discomfort is controlled. During sedation procedure, assess continuously.)

5. Assessment parameters
   A. Functional level and ability to relax
   B. Pain: type, location, intensity
      (ie, using self-report pain rating scale whenever possible [age, language, condition, and cognitive appropriate tools], quality, frequency [continuous or intermittent], and sedation level; patient's method of assessment and reporting need to be the same during the postoperative continuum
IMPROVING NURSES' PAIN MANAGEMENT IN PACU

of care for consistency.) Note pain level at rest and during activity.
C. Self-report of comfort level using numerical scale (0 to 10 scale) or other institutional approved instruments
D. Physical appearance
   (eg, pain/discomfort behaviors [Note: Pain behaviors are highly individual and the absence of any specific behavior, eg, facial expression, body movement, does not mean the absence of pain])
E. Other sources of discomfort
   (eg, position, nausea and vomiting, shivering, environment such as noise, noxious smell, anxiety)
F. Achievement of pain relief/comfort treatment goals
G. Age, cognitive ability, and cognitive learning methods
H. Status/Vital signs
   A. Airway patency, respiratory status, breath sounds, level of consciousness, and pupil size as indicated and other symptoms related to the effects of medications
   B. Blood pressure
   C. Pulse/cardiac monitor rhythm
   D. Oxygen saturation
   E. Motor and sensory functions post-regional anesthesia technique

Interventions
1. Identify patient correctly; validate physician's order; implement correct drug, dose, amount, route, and time; include type of surgery and surgical site as applicable
2. Pharmacologic (medicate as ordered)
   A. Mild to moderate pain—use non-opioids and may consider opioid (eg, acetaminophen, nonsteroidal anti-inflammatory drugs [NSAIDs], cyclooxygenase 2 [COX-2] inhibitors). All the patient's regular non-opioid prescription medications should be made available unless contraindicated and per institutional approval.
   B. Moderate to severe pain—use multimodal therapy (eg, combine non-opioid and opioid)
   C. Utilize the 3 analgesic groups appropriately (consider multimodal therapy)
      i. Non-opioids
         (eg, acetaminophen, NSAIDs, COX-2 inhibitors; adjuvants non-opioids [acetaminophen and NSAIDs, such as aspirin, ketorolac, ibuprofen, COX-2 inhibitors])
      ii. µ-Agonist opioids
         (eg, morphine, hydromorphone, fentanyl)
      iii. Adjuvants
         a. Multipurpose for chronic pain
            (eg, anticonvulsants, tricyclic antidepressants, corticosteroids, anxiolytic medication)
         b. Multipurpose for moderate to severe acute pain
            (eg, local anesthetics, ketamine)
         c. Neuropathic continuous pain—antidepressants, tricyclic antidepressants, oral or local anesthetic
data. Neuropathic lancinating pain (stabbing, knifelike pain)—anticonvulsant, baclofen
c. Malignant bone pain—corticosteroids, calcitonin
   f. Post-orthopedic surgery—consider muscle relaxants if patient experiences muscle spasm
3. Initiate and adjust IV and regional infusions (PCA) as indicated and ordered, and based on hemodynamics status (Refer to institutional permissive procedure.)
4. Nonpharmacologic intervention use to complement, not replace, pharmacologic interventions
5. Administer comfort measures as needed
   A. Physiological
      (eg, positioning, pillow, heat and cold therapies, sensory aids [eg, dentures,
1. Patient maintains hemodynamic stability including respiratory/cardiac status and level of consciousness
2. Patient states achievement of pain relief/comfort treatment goals (eg, acceptable pain relief with mobility at time of transfer or discharge)
3. Patient states he/she feels safe and secure with the instructions (eg, use of PCA machine)
4. Patient shows effective use of at least one nonpharmacologic method (ie, breathing relaxation techniques)
5. Patient shows effective use of PCA as indicated and discusses expected results of regional techniques
6. Patient verbalizes evidence of receding pain level and increased comfort with pharmacologic and nonpharmacologic interventions

**Postanesthesia Phase II/III**

**Assessment**
1. Refer to preoperative phase and Phase I assessments, interventions, and outcomes data
2. Achievement of pain/comfort treatment goals and level of satisfaction with pain relief and comfort management
3. Pain relief/comfort management plan for discharge and patient agreement
4. Educational and resource needs, considering age, language, condition, and cognitive appropriateness

**Interventions**
1. Identify patient correctly; validate physician's order; implement correct drug, dose, amount, route, and time
2. Pharmacologic interventions (medicate as ordered): non-opioid (eg, acetaminophen, NSAIDs, COX-2 inhibitors), μ-agonist opioids (eg, morphine, hydromorphone, fentanyl), and adjuvant analgesics (eg, local anesthetics)
3. Continue and/or initiate nonpharmacologic measures from Phase I
4. Educate patient and family/caregiver
   A. Pain and comfort measures
   B. Untoward symptoms to observe
   C. Regional or local anesthetic effects dissipating after discharge (eg, numbness, motor weakness, or inadequate relief) and potential adjustments as applicable
   D. Availability of resource as needed
5. Discuss misconceptions, expectations and implement plan of action satisfactory to patients
6. Address nausea with pharmacologic interventions or other techniques and discuss expectations

**Expected Outcomes**
1. Patient states acceptable level of pain relief and comfort with movement or activity at time of transfer or discharge to home
2. Patient verbalizes understanding of discharge instruction plan:
   A. Specific drug to be taken
   B. Frequency of drug administration
   C. Potential side effects of medication
   D. Potential drug interactions
E. Specific precaution to follow when taking medication
   (e.g., physical limitation, dietary restrictions)
F. Name and telephone number of the physician/resource to notify about
   pain, problems, and other concerns
3. Patient states understanding or shows effective use of nonpharmacologic methods
   (e.g., cold/heat therapy, relaxation breathing, imagery, music)
4. Patient states achievement of pain/comfort treatment goals and level of
   satisfaction with pain relief and comfort management in the perianesthesia setting

Selected Resources

1. Identify the problem and select knowledge.
Lack of knowledge on pain and its management in the PACU and ineffective team communication.

2. Adapt knowledge to local context.
Nurses' knowledge was assessed using the survey questions:
- Are you familiar with the ASPAN Pain and Comfort Guideline?
- Have you heard about the SBAR communication method?

3. Assess barriers to knowledge use.
Nurses’ time constraints and workload, resistance to change including their culture, beliefs and lack of interest.

4. Select, tailor and implement intervention.
Educational intervention on pain and its management in the PACU, ASPAN Pain and Comfort Guideline and the SBAR.
- Passive (power point presentation)
- Active (role playing on SBAR)

5. Monitor knowledge use.
Application of knowledge regarding pain and its management and communication were in the form of case study and role playing.

6. Evaluate outcomes.
Posttest survey on the knowledge of pain and its management, SBAR and the satisfaction survey.

Figure 2. Theoretical Framework Application to Educational Intervention