PAIN MANAGEMENT IN THE POST ANESTHESIA PHASE OF NURSING CARE:
A SYSTEMATIC REVIEW OF THE LITERATURE

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Introduction

Pain management is an extremely important subject in nursing practice. In recent years, there has been an increasing interest in postoperative pain management, or pain management in the post anesthesia phase of nursing care. Nursing professionals have an obligation to advocate for their patients’ right to effective pain management. Patients should have access to the to the highest quality pain management available. If nurses lack the necessary knowledge and skills to provide excellent pain management, then patient care, as well as subsequent patient satisfaction, will be suboptimal. Although there are a myriad of sources available related to pain management, a lack of understanding about pain management continues to be an issue.

No matter how successful an operation may be, tissue trauma secondary to the surgical procedure, positioning during the procedure, and invasive equipment can cause unpleasant sensory and emotional experiences (Acute Pain Management Guideline Panel, 1992; Hargreaves & Dionne, 1991). The main goal of postoperative pain treatment is to provide comfort to the patient after surgical procedures by inhibiting nociceptive impulses induced by trauma (Urden, Stacy, & Lough, 2010). In turn, this acts to blunt the body’s reflex responses to pain. When pain treatment is effective, the patient is able to enhance restoration of function by moving, breathing, and coughing more easily and effectively. Unrelieved pain after surgery is unhealthy and should be taken care of promptly and effectively by knowledgeable nursing professionals.

Pain has been widely defined in several different ways. McCaffery defines pain as “whatever the experiencing person says it is, existing whenever he says it does” (as
cited in Berry, Katz, Covington, Miaskowski, & Dahl, 2005, p. 4). This emphasizes that pain is a subjective experience. The most widely used definition of pain, introduced by the International Association for the Study of Pain, is “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Berry et al., 2005, p. 4). As evidenced by this definition, pain is a very complicated experience that encompasses several dimensions.

Pain can be classified as acute or chronic. Surgical pain is typically acute in nature. Acute pain can be defined as a “complex, unpleasant experience with emotional and cognitive, as well as sensory features that occur in response to tissue trauma” (Berry et al., 2005, p. 10). Acute pain serves an important biologic purpose, which is to inform the individual that injury has occurred. Once the tissue injury has healed, the acute pain subsides. Unrelieved acute pain can become chronic. Chronic pain is not only longer in duration than acute pain, but may also extend beyond the healing time of the tissue (Berry et al., 2005). Therefore, chronic pain may persist even when there seems to be little or no cause for that pain.

Due to the fact that pain encompasses so many dimensions, pain does not have a one-to-one relationship with the pain inducing stimulus (Briggs & Dean, 1998). In turn, each person may react differently to the same surgical procedure. This causes a great need for a patient centered approach to pain assessment and relief rather than a universally used standard postoperative care plan (Briggs & Dean, 1998). Nursing care plans may be utilized for guidance, but should not be the sole means of pain management planning.
According to the Quality and Safety Education for Nurses Initiative [QSEN] (2011), patient centered care is defined as “recognize[ing] the patient or designee as the source of control and full partner in providing compassionate and coordinated care based on respect for patient's preferences, values, and needs.” This patient centered approach to pain management should be instituted throughout the entire operative process. It is necessary for patients with post operative pain to be managed in a holistic manner with the collaboration of the entire health care team. This makes it imperative for the nurses in the post anesthesia care unit to be aware of all aspects of postoperative pain management in order to adequately plan and carry out a pain management plan. Nurses are the members of the health care team that spend the most one-on-one time with the patient. They are the primary health care professionals who administer analgesic medications and monitor patients for any therapeutic or non-therapeutic effects. In turn, nurses tend to be the best candidates to advocate for the patients. This requires knowledge of the pain process, as well as an understanding of individual patient needs.

Adequate management of pain begins with a comprehensive and knowledgeable assessment of the pain. The American Pain Society [APS] designated pain assessment as the fifth vital sign (Berry et al., 2005). This designation stresses the importance of the need for regular pain assessment. It is important to first explore the best ways to assess pain before discussing how to manage it. Pain assessment may include subjective reports from the patient, as well as objective signs of distress. In addition, pain is often best assessed through the use of pain assessment scales. When a common pain assessment scale is used and documented throughout the patient’s care, it assures that the staff will
understand the pain intensity assessed by each member of the healthcare team. It is important for the nurse to understand that adequate pain management can only take place after a thorough pain assessment is completed.

After a satisfactory pain assessment, the proper pharmacologic and non-pharmacologic pain management methods can be chosen. Some pharmacologic methods include the following: non-steroidal anti-inflammatory drugs, opioids, postoperative epidural anesthesia, and patient-controlled analgesia. The administration, action, and desired response of these medications vary depending on the type and route of administration chosen.

Various non-pharmacologic methods have been discovered and research has been completed on their effectiveness (Acute Pain Management Guideline Panel, 1992; Bostrom, Ramberg, Davis, & Fridlund, 1997; Jones & Johnson, 2009). At times, in the post anesthesia care unit, aggressive pharmacologic pain management may be contraindicated due to physiologic instability (Litwack, 1995). Non-pharmacologic interventions may provide an alternative or conjunctive treatment approach for pain management. They allow patients to have active involvement in their pain control, and therefore have been shown to provide clients with an increased sense of control, reduced anxiety, elevated mood, and increased pain threshold (McGuire, Sheidler, & Polomano, 2000). Some common examples of non-pharmacologic methods include the use of heat and cold applications, massage, transcutaneous electrical nerve stimulation (TENS), guided imagery, relaxation techniques, and music therapy.

It is important for nurses to be knowledgeable about all of the aspects of pain and
pain management in order to aid in the effective management of post operative pain. In addition to knowing how to assess the pain, administer the pain relief measures, and evaluate their effectiveness, nurses must also know how to educate patients on the various pain management methods and tools. An understanding of pharmacologic and non-pharmacologic methods of pain management in the post anesthesia phase is crucial for safe and effective nursing care of postoperative patients.

**Physiology of Pain**

In order to adequately manage pain, it is important that nurses first understand the physiology of pain. Pain is the experience that comes from nociception, which includes four processes: transduction, transmission, perception, and modulation (Berry et al., 2005; Urden et al., 2010). During transduction, the nociceptive stimuli, or stressors, stimulate the release of many neurotransmitters that stimulate receptors and initiate the next step, which is transmission (Berry et al., 2005; Urden et al., 2010). During transmission, an action potential is transmitted via the spinal cord to higher centers of the brain (Berry et al., 2005; Urden et al., 2010). This part of the process is where muscle rigidity, related to motor fibers synapsing with nociceptive fibers, may become a problem. This includes decreased diaphragmatic activity, which may cause hypoventilation and hypoxemia (Berry et al., 2005; Urden et al., 2010). In the perception phase, the pain message reaches the brain, where it is perceived by the brainstem, thalamus, and hypothalamus (Berry et al., 2005; Urden et al., 2010). These areas of the brain allow the patient to subjectively describe the characteristics of their experienced pain. In addition, facial expressions and body movements related to the pain also result
from the motor cortex area of the frontal lobe (Berry et al., 2005; Urden et al., 2010). Finally, in the modulation phase, the endogenous opioids are released by the central nervous system to produce analgesia. This blunts the pain to a certain degree (Berry et al., 2005; Urden et al., 2010). The pain that remains is what nursing professionals are responsible for working to relieve.

**Patient Preferences and Expectations**

Numerous studies have been conducted regarding patients’ preferences and expectations related to pain management. It is important for nurses and other health care professionals to understand the factors that affect the preferences and expectations of each patient. This will allow health care providers to work toward obtaining the highest level of patient satisfaction possible. The Agency for Health Care Policy and Research recommends that health care professionals respect each patient’s preferences for pain management methods (as cited in Dixon, 1993). This will help to increase patient satisfaction with pain management. In order for patients to be comfortable with voicing their opinions, a positive relationship with the health care professional must first be established (Briggs & Dean, 1998; Dixon, 1993; Gunningberg & Idvall, 2007).

Patients expect to experience pain following a surgical procedure. However, it has been discovered that many times the pain intensity is much greater than what the patient expected, which may lead to dissatisfaction in pain management (Carr & Thomas, 1997; Gunningberg & Idvall, 2007; Roth et al., 2005). Lack of information, inadequate pain assessment, and ineffective pain control may contribute to this finding (Carr & Thomas, 1997; Wallace, 1985; Walmsley, Brockopp, & Brockopp, 1992). Education can
aid in combating this cause of patient dissatisfaction. When patients are educated preoperatively about what they can expect related to pain management, they report greater levels of satisfaction (Roth et al., 2005). There may be emotional repercussions when it comes to a large difference between expected and perceived pain intensity. Extreme emotional reactions can further complicate the patient’s pain level and recovery time from the surgical procedure (Kiecolt-Glaser, Page, Marucha, MacCallum, & Glaser, 1998).

Typically, patient satisfaction is inversely related to the level of pain experienced (Joshi, 1999; McNeill, Sherwood, Starck, & Thompson, 1998). As pain level increases, patient satisfaction decreases. Some factors that predicted higher pain levels and lower satisfaction were as follows: female gender, high preoperative pain levels, high anxiety about risks and problems, low expected pain severity, younger patient age, or a high willingness to report pain (Thomas, Robinson, Champion, McKell, & Pell, 1997).

To combat high levels of pain, several proven methods can be used. Research has shown that patients prefer certain pain management methods over others. The highest ranked pain management methods were as follows: intravenous and intramuscular injections, oral pain medication, and prayer (McNeill et al., 1998). Patients also tend to be more satisfied with intravenous patient controlled analgesia (IV-PCA) due to feelings of autonomy and control (Bostrom et al., 1997; Breivik, 2002; Fillingim, King, Ribeiro-Dasilva, Rahim-Williams, & Riley, 2009; Roth et al., 2005; Walder, Schafer, Henzi, & Tramer, 2001; Yimyaem et al., 2006). IV-PCA is much more effective than intermittent injections of analgesia (Acute Pain Management Guideline Panel, 1992; Breivik, 2002;
Rathmell et al., 2006; Walder et al., 2001; Yimyaem et al., 2006). The literature has also noted that in addition to opioid administration, regular administration of acetaminophen increases analgesia and in turn increases patient satisfaction (Breivik, 2002).

Patient satisfaction with pain management is not always directly related to pain intensity. It is possible to achieve patient satisfaction even though the patient is experiencing pain. For example, if patients are unaware of the alternate pain relief methods that are available, they may express satisfaction with pain relief measures despite the fact that they are still experiencing pain (Bostrom et al., 1997). Research has indicated that, at times, patient satisfaction may be directly related to how the health care provider responds to their pain (Bostrom et al., 1997; McNeill et al., 1998; Roth et al., 2005). Patients expect their complaints regarding pain to be taken seriously. In addition, they expect to receive the analgesia that they have requested in a timely manner (Fosnocht, Swanson, & Bossart, 2001). If a health care professional treats a patient well, they are more inclined to be satisfied with their pain management despite being under medicated (Bostrom et al., 1997). Bostrom et al. (1997) found that patients tended to be more satisfied with how nurses treated their pain when compared with how physicians treated their pain. They noted that this may be related to the caring nature of the nurses involved in the study. Encouraging patients to voice their pain concerns leads them to trust their health care providers and subsequently contributes to satisfaction with pain management (Roth et al., 2005).

Patients treated with standardized pain management, developed by the APS, tend to be more satisfied with pain management than those who are not (Roth et al., 2005).
Non-standardized pain management, which includes no control, standard analgesics, standard dosages, or guidelines for dosage adaptation, causes pain management to be inconsistent and suboptimal (Roth et al., 2005). Acute pain management has become much more effective through the implementation of APS clinical practice guidelines. This includes standards to reduce post operative pain, educate patients regarding how to communicate their pain needs, and enhance patient comfort and satisfaction (McNeill et al., 1998). The APS emphasizes the need to assess patient satisfaction with staff response to the reports of pain and satisfaction with relief provided (McNeill et al., 1998).

**Consequences of Inadequate Pain Management**

Unrelieved pain after surgery is very unhealthy and can lead to severe consequences for the patient (Sjostrom, Dahlgren, & Halijamae, 2000; Urden et al., 2010). It is important for health care providers to manage each patient’s pain as adequately as possible. Furthermore, it is ethically sound practice to work diligently to alleviate unnecessary suffering related to unrelieved pain (Sjostrom et al., 2000). It is also vital to take quality and safety standards related to pain management into account when discussing the consequence of inadequate pain management (QSEN, 2011). The QSEN (2011) quality and safety competencies include not only patient centered care, but also teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics.

The pain process proceeds through several stages, each of which can cause physiologic consequences when pain is not promptly addressed. Pain activates the biologic stress response, which includes a short term direct response, as well as midterm
and long-term indirect responses (Urden et al., 2010). During the short term direct response, the sympathetic nervous system is activated, which may cause an increase in heart rate, blood pressure, respiratory rate, and perspiration (Urden et al., 2010). As the pain persists, the parasympathetic nervous system is activated. This causes a decrease in the sympathetic responses (Urden et al., 2010). During the midterm indirect response, adrenocorticotrophic hormone (ACTH) and vasopressin are released. ACTH causes the release of aldosterone and cortisol (Urden et al., 2010). Vasopressin and aldosterone decrease the amount of sodium and water excreted, causing decreased diuresis and increased blood pressure (Urden et al., 2010). Elevated cortisol levels can lead to infection and hyperglycemia (Urden et al., 2010). Unrelieved pain can lead to negative psychological effects. These include high levels of distress and anxiety, disturbed sleep, and altered cognitive processes (Bostrom et al., 1997; Breivik, 2002; Joshi, 1999). Depression may result when pain remains unrelieved for a long period of time.

When patients are more comfortable, they are better able to collaborate with the nurse and other health care providers to facilitate their recovery. When pain inhibits movement, patients are unwilling or unable to fully participate in rehabilitation exercises. The pain may distract them from the task at hand or limit their ability to focus on these important activities. They are better able to participate in a rehabilitation program when their pain is managed effectively (Breivik, 2002). Adequate pain management helps patients to resume their normal activities sooner (Joshi, 1999; Roth et al., 2005). Additionally, they are able to cough and deep breathe more effectively, which helps to prevent respiratory complications (Breivik, 2002).
Chronic pain may develop when postoperative pain remains unresolved (Bostrom et al., 1997; Breivik, 2002; Dubner, 1991). Better acute pain relief following surgery, beginning in the perianesthesia phase of nursing care, can reduce the risk of chronic pain development (Breivik, 2002). Not only is chronic pain an undesirable outcome, but it can lead to adverse consequences, such as decreased mobility, depression, anxiety, and disturbed sleep. Chronic pain may foster morbidity. When pain persists for a long period of time, the long term indirect response is immunosuppression related to the release of cortisol and cytokines (Urden et al., 2010).

Inadequate pain management may contribute to morbidity and delayed recovery from surgery (Bostrom et al., 1997; Roth et al., 2005; Wasylak, Abbott, English, & Jeans, 1990). Unrelieved pain has the potential to compromise the patient’s immune system, greatly increasing the risk of morbidity (Breivik, 2002; Urden et al., 2010). It may result in respiratory complications, such as atelectasis and pneumonia, related to the unwillingness of the patient to cough and deep breathe (Breivik, 2002). Unrelieved pain can cause cardiovascular complications, including tachycardia, hypertension, increased myocardial oxygen demand, myocardial ischemia or infarction, dysrhythmias, and increased vascular resistance (Breivik, 2002; Urden et al., 2010). Gastrointestinal side effects, such as nausea, vomiting, and delayed oral nutrition, may occur when pain is unrelieved (Breivik, 2002; Joshi, 1999). In addition, renal complications can develop, such as oliguria and urinary retention (Breivik, 2002).

Unrelieved pain may increase hospital cost (Breivik, 2002; Stomberg, Sjostrom, & Haljamae, 2003). It can contribute to a prolonged stay in the post anesthesia care unit,
prolonged hospitalization in general, and even prevent timely discharge of the patient from the hospital (Joshi, 1999; Roth et al., 2005; Stomberg et al., 2003). Unrelieved pain and its associated consequences may cause several readmissions into the hospital (Breivik, 2002).

**Pain Assessment**

The first step of postoperative pain management is assessment. Pain has several features that can be assessed post operatively. This includes the following: aggravating factors, intensity, quality, location, impact, time course (Acute Pain Management Guideline Panel, 1992; Urden et al., 2010). Effective pain management cannot take place without effective pain assessment.

Melzack, a Canadian psychologist, proposed a theory of pain in 1965 (Urden et al., 2010). Melzack’s multidimensional theory related to pain and pain assessment integrated nociception with the stress response (Urden et al., 2010). He clustered the signs used in pain assessments into subjective and objective categories. Subjective signs were those that were not observable and must be reported by the patient, such as pain level and quality (Urden et al., 2010). Objective signs included both physiologic and behavioral indicators, such as guarding and vital sign changes (Urden et al., 2010). Both of these categories can be used to assess pain levels in the post anesthesia care unit.

Melzack’s theory of pain provided the basis for the development of the McGill Pain Questionnaire. The short form of this questionnaire consists of fifteen descriptors which are rated on the pain intensity scale from one (mild) to three (severe) (Melzack, 1987). Eleven of these descriptors relate to sensory components, while the other four
relate to affective components (Melzack, 1987). Three scores are derived from these values for sensory, affective, and total descriptors (Melzack, 1987). The McGill Pain Questionnaire – Short Form takes two to three minutes to complete and can be used to assess those patients who are sedated or cognitively impaired (Urden et al., 2010).

Successful assessment and control of pain depends largely on the establishment of a positive relationship between the nurse and patient (Acute Pain Management Guideline Panel, 1992). Assessment of pain after surgery should be frequent and simple, with regular intervals of assessment and reassessment (Bostrom et al., 1997; Dixon, 1993). This is due to the fact that the post anesthesia care unit is a very fast paced unit that necessitates quick actions. In addition, the condition of a patient, especially pain levels, can change very quickly as anesthesia wears off. Therefore, nurses must pay close attention to the frequency and simplicity of pain assessment. If the pain is poorly controlled and the patient continues to complain of high levels of pain, then it is necessary for the frequency of pain assessment to increase (Dixon, 1993).

The Agency for Health Care Policy and Research (AHCPR) recommends regular assessment of pain intensity and relief (as cited in Dixon, 1993). Assessing pain frequently will help to prevent the pain from becoming too intense. Furthermore, regular reassessment of pain after the administration of an analgesic will help the nurse to determine if further pain control methods are necessary. Reassessment will also help the nurse to determine if the adverse effects of the analgesic method outweigh the benefits of the pain relief. Research has proven that intense pain is much harder to treat than it is to prevent (Acute Pain Management Guideline Panel, 1992; Dixon, 1993; Joshi, 1999).
Therefore, it is very important to assess and treat the pain as soon as it begins and before it escalates to an unmanageable state.

According to findings by Briggs and Dean (1998), pain assessment must be more specific and individualized. They found that nursing documentation of pain assessment was inadequate and the nurse’s record of pain varied greatly from patient report of pain (Briggs & Dean, 1998). This study included an extensive literature review that supported their findings. The findings from this study could be related to unreliable methods of pain assessment. Therefore, standards related to the use of reliable, easy to use assessment tools should be implemented at all health care facilities (Bostrom et al., 1997). Another factor contributing to this problem includes the nurse not actively listening and considering the patient’s subjective pain reports. It is important to allow the patient adequate time to voice their concerns. Once expressed, the nurse has a responsibility to take the patient’s comments into consideration. Another factor to consider includes nurses lacking the necessary skills to properly document pain clearly. Improvement in this area could be achieved by implementing educational programs for nurses about the importance of accurate and timely pain assessment and subsequent documentation of nursing interventions to relieve the pain.

Briggs and Dean (1998) found that the nurses rarely documented pain experienced through the nighttime hours. If the pain assessment and relief measures are not documented, then one can conclude that they were not done. This is an issue because pain assessment and relief remain just as important, if not more important, throughout the night. If a patient is unable to get adequate sleep due to unrelieved or poorly managed
pain, the healing process is slowed (Breivik, 2002). Inadequate amounts of sleep can have adverse health outcomes, such as a weakened immune system (Robinson, 2010). Proper assessment and documentation is necessary in order for satisfactory pain management to occur throughout the nighttime hours.

Clement and Cummings (1991) noted that patients need to have more involvement in their care, including pain assessment. In fact, they found that patients prefer to have more control over their care. The control allows them to feel that they have a say in what happens to them regarding pain management. It allows them to decide how to manage their pain and if the management is sufficient. Since pain is a subjective phenomenon, the patient is the only person who truly knows the amount of pain that they are experiencing. Therefore, the more involved they are, the better their pain management will be. Patients tend to be more satisfied with their pain management when they feel autonomy and control (Roth et al., 2005).

Briggs and Dean (1998) noted that there is little documented evidence related to the reassessment of patients’ pain. This impedes the nurse from determining whether or not the pain relieving interventions are effective. Nurses must know if the pain relieving interventions are ineffective so that an alternative or additional pain management method can be implemented. Reassessing the patient’s pain allows the nurse to assess for any adverse reactions to the medication. There is a need for documentation that gives unrelieved pain a red flag (Bostrom et al., 1997). Documentation of unrelieved pain is a critical element. It helps to assure that the unrelieved pain is promptly addressed.

**Subjective Reports**
Since pain is recognized as a subjective experience, subjective signs of pain are the best indicator of post operative pain levels. Subjective signs of pain refer to verbal reports from the patient. The most reliable indicator of pain is the patient’s self report (Acute Pain Management Guideline Panel, 1992; Dixon, 1993; Urden et al., 2010). Quality, intensity, location, and timing must be taken into account when assessing subjective reports of pain. A patient’s rating of pain intensity is a “well established method used by health professionals for pain assessment” (Bostrom et al., 1997, p. 346). Therefore, asking the patient to rate their pain and describe it is an invaluable tool when it comes to pain assessment.

When questioning a patient about their pain experience, it is important to ask them about the quality, intensity, location, and timing of the pain. The quality of a patient’s pain refers to the pain sensation (Urden et al., 2010). This helps the nurse to determine what kind of pain that the patient is experiencing. It provides important clues to the cause or origin of the pain. Pain management may differ according to the type of pain that is being experienced. Intensity, or severity, of pain refers to the measurement of how much pain that a patient is experiencing (Urden et al., 2010). Most often, this is assessed by using a pain assessment scale. The location of the pain refers to where exactly the patient is feeling the pain. Finally, the timing of the pain refers to the duration, onset, and frequency of the pain (Urden et al., 2010). Onset is used to determine what the patient was doing when the pain began, duration is used to determine how long the pain has lasted, and frequency is used to determine how often the pain occurs. In this instance, the nurse may want to make use of a mnemonic, such as
PQRST, to assist with a thorough pain assessment. PQRST represents the following characteristics of pain assessment: provocative and palliative factors, quality, region or radiation, severity and other symptoms, and timing (Urden et al., 2010).

Listening to the patient’s report of pain is much more useful than assuming pain level from how the patient looks (Sjostrom et al., 2000; Urden et al., 2010). This is due to the fact that the objective signs may not be congruent with the actual pain level experienced by the patient. Typically, in the post anesthesia care unit, the nurse has no baseline regarding the patient’s actions prior to surgery. It is difficult to determine whether the observed actions are typical of the patient or indicative of pain. Normal actions of a patient may be viewed as being objective signs of distress since the nurse is unaware of how the patient acted prior to the surgical procedure. Rather than assuming that someone is in pain, asking them for their subjective report of the pain is much more accurate.

In order to manage pain effectively, it is important for the nurse to emphasize the importance of a factual pain report to the patient (Acute Pain Management Guideline Panel, 1992). Every health care provider needs to remember the golden rule of pain as stated by McCaffrey: “pain is whatever the experiencing person says it is, existing whenever he says it does” (as cited in Taylor, Kuttler, Parks, & Milton, 1998, p. 89). Since pain is defined as a sensory and emotional experience, it is impossible to truly be able to accurately assess pain without asking the patient. Even if the objective signals do not match the report of pain, it is necessary for health care professionals to trust what the patient says and act accordingly.
**Objective Signs**

Although subjective reports of pain tend to be the most accurate form of pain assessment, objective signs may also be taken into account. Objective signs of distress are those that are directly observed by the nurse. Objective pain assessment is especially useful if a patient is unable to express pain for one reason or another (Acute Pain Management Guideline Panel, 1992; Dixon, 1993; Urden et al., 2010). This may be due to the fact that these patients have received anesthesia for the surgical procedure and it takes time for the anesthetic to wear off. Objective pain assessment can be done in conjunction with subjective pain assessment. It is important to remember that patients may not accurately portray objective signs of pain and the nurse may not interpret objective signs of distress appropriately. For example, a patient could use laughter as a coping mechanism to deal with the pain, causing the nurse to believe that they are not experiencing any pain (Fritz, 1988). It is best to assess pain directly by asking the patient when they are able to provide subjective reports of pain.

Physiological responses to pain must be taken into account when assessing pain in the post anesthesia care unit. Important physiological responses include changes in heart rate, blood pressure, and respiratory rate (Acute Pain Management Guideline Panel, 1992, Dixon, 1993; Urden et al., 2010). Although physiologic responses are not a sole indicator of patient needs, they can still show how the pain or analgesic is affecting the patient. These physiologic responses to pain are relatively easy to assess in the post anesthesia care unit because each patient’s vital signs are constantly monitored. Unexpected intense pain associated with altered vital signs necessitates immediate
evaluation and action to determine if a complication has occurred (Acute Pain Management Guideline Panel, 1992). Additional physical indicators of pain include facial distortion, difficult ambulation, avoidance of movement, postural distortion, and negative affect (Sjostrom et al., 2000).

As noted previously, these physical indicators are not the most reliable methods of pain assessment. It has been found that when nurses used objective signs of distress for the assessment of pain, there was a high discrepancy from the patients own report (Briggs & Dean, 1998; Giordano, Abramson, & Boswell, 2010; Sjostrom et al., 2000). It is important to remember the golden rule that pain is whatever the patient describes it to be due to the fact that pain is a sensory and emotional experience known only to the patient (Taylor et al., 1998).

**Assessment Scales and Tools**

A comprehensive approach to pain assessment requires the evaluation of several factors. This includes patient perceptions, behavioral responses, physiologic responses, and patient attempts to control their own pain (Acute Pain Management Guideline Panel, 1992). Since pain typically increases with movement, the patient’s pain should be assessed during movement, as well as at rest (Acute Pain Management Guideline Panel, 1992). There are multiple pain assessment scales and tools available for use by health care professionals that incorporate these aspects of pain assessment. These tools include verbal analogue scales, adjective naming, and visual analogue scales (Acute Pain Management Guideline Panel, 1992, Dixon, 1993). The patient’s preferred tool for pain assessment, as well as their tolerable pain level, should be documented.
Visual and verbal analog scales have proven to be very useful when assessing postoperative pain (Dixon, 1993). When using the verbal analogue scales, the nurse asks the patient to rate their pain on a scale of zero to ten, with zero being no pain and ten being the worst pain possible (Bostrom et al., 1997). Verbal analogue scales are the most commonly used pain rating scales. Visual analogue scales are found in many different forms. One such format utilizes pictures of faces depicting different levels of pain. The faces depict varying degrees of smiles and frowns. This type of pain assessment scale is useful if a patient lacks the capacity to understand how to use a verbal rating scale using numbers. Visual analogue scales can also be presented graphically (Acute Pain Management Guideline Panel, 1992). In this instance, a patient would put a mark on a graph. One end of the graph is the worse pain ever felt, while the other end is no pain. The mark is then measured from the zero to determine the pain rating. This type of visual scale is very helpful if the patient is alert but unable to speak.

Rather than referring to a scale with various degrees of pain being expressed in a gradient manner, adjective naming refers to the patient subjectively describing various characteristics related to their pain (Urden et al., 2010). Using the adjective rating scale along with another scale, such as the verbal analogue scale, is recommended (Acute Pain Management Guideline Panel, 1992).

It is important to choose the most reliable tool based upon the patient’s developmental, physical, emotional, and cognitive status (Dixon, 1993). Cognitive impairment related to residual anesthesia effects may limit the nurse’s ability to adequately assess pain via subjective reports. However, it is very important to assess the
pain level and administer analgesics prior to the pain becoming too severe. By the time the patient’s level of consciousness increases enough to allow him to be helpful in his own pain assessment, the pain intensity may have become too intense to adequately treat.

**Barriers to Pain Assessment and Management**

**Health Professional Barriers**

It would be ideal for nursing documentation of pain to always directly correspond with the patient’s experience of the pain. Since pain is such a subjective experience, accurate documentation of the patient’s report of pain can be challenging. The literature has reported that nurses’ pain assessment and documentation does not always correspond with patients’ self reports (Briggs & Dean, 1998; Coyne et al., 1999; Gunningberg & Idvall, 2007; Sjostrom et al., 2000; Thomas et al., 1997). There are several factors that may cause assessment and documentation of pain to be inaccurate, causing inadequate pain management.

Lack of a trusting therapeutic relationship is one reason why nursing documentation was found to be inconsistent and inaccurate with patient report (Briggs & Dean, 1998; Gunningberg & Idvall, 2007). Pain management is contingent on the nurse-patient relationship. The nurse must promptly attempt to establish a trusting therapeutic relationship with the patient. This type of partnership between the nurse and patient allows patients to feel more comfortable expressing their pain. However, this may be a challenge due to care only being short term in the post anesthesia care unit. Since nurses tend to underestimate analgesic need and overestimate coping strategies of patients, a good relationship allows the nurse to better understand the patient’s report (Giordano et
al., 2010; Roth et al., 2005). In addition, nurses must be adequately educated on the potential for addiction and tolerance. Nurses, as well as patients, tend to overestimate the risk of addiction and tolerance (Roth et al., 2005). If the nurse is able to provide the patient with accurate information related to addiction and tolerance, the patient may trust their nursing care more.

The discrepancy between nursing documentation and patients’ report of pain may be due to nurses relying on non-verbal (objective) signs of pain. This method of pain assessment has been found to be unreliable due to the subjective nature of pain (Briggs & Dean, 1998; Giordano et al., 2010; Taylor et al., 1998). A common problem in the post anesthesia care unit is that many patients present with cognitive impairment from the anesthesia (Acute Pain Management Guideline Panel, 1992; Dixon, 1993; Urden et al., 2010). Therefore, this unreliable objective assessment may be the only pain assessment report that nurses have available during that time period.

Perhaps the method of documentation is suboptimal, causing patient report and documentation to mismatch. Inadequate knowledge related to pain assessment and documentation may be where the problem lies (Brunier, Carson, & Harrison, 1995; Clarke et al., 1996; Gunningberg & Idvall, 2007). In order to adequately document pain assessment, the nurse must first be thoroughly educated on the subject. At times, nursing documentation is found to provide a list of events, rather than an evaluation (Briggs & Dean, 1998; Davis, Billings, & Ryland, 1994). This lack of evaluation causes the documentation to be suboptimal. A delay between the pain assessment and subsequent documentation may contribute to nurses forgetting exactly what the patient reported,
causing documentation to be inaccurate and inadequate. Furthermore, the nurse may simply forget to document the pain assessment, or complete the pain assessment altogether (Coyne et al., 1999).

**Patient Barriers**

Pain management is also the patient’s responsibility. It is important for the patient to express his pain as accurately as possible. The nurse may want to educate the patient on the importance of accurate reporting (Briggs & Dean, 1998). The patient must understand that it is vital to report pain in a timely manner, as soon as the pain arises. Effective pain management can only occur if the patient effectively communicates the pain level and characteristics to the nurse. The patient and their family should be educated on why effective pain management is of importance to them. Patients should also understand how they can help to make their pain management as successful as possible.

**Additional Recommendations**

There are several recommendations that can be implemented to aid in making nursing documentation and patient report match. Each health care organization should analyze their pain management issues and practice in order to determine how to best educate the health care professionals at their institution. This should be followed by the implementation of standardized, systematic pain assessment tools (Briggs & Dean, 1998; Gunningberg & Idvall, 2007). Nurses should be required to document pain assessment when it occurs, rather than at the end of the shift or later in the day (Briggs & Dean, 1998). If nursing documentation were more specific and individualized, perhaps there
would be less of a discrepancy between patient report and nursing documentation (Briggs & Dean, 1998). There is a need for increased patient involvement (Briggs & Dean, 1998; Clement & Cummings, 1991). Each patient should be encouraged to actively participate in the pain assessment and management process.

**Preoperative Considerations and Patient Education**

Prior to the surgical procedure, health care providers should collaborate to determine their plan for pain management throughout the perioperative process in each patient’s medical record (Acute Pain Management Guideline Panel, 1992). This assures that all pain management techniques are cohesive. Preoperative planning offers an opportunity for health care providers to work together to determine the best pain management plan for each patient. This provides an opportunity for any member of the health care team to accurately answer any patient questions and provide the patient with information about the types of pain management techniques they can expect (Acute Pain Management Guideline Panel, 1992). Appropriate preoperative education has been shown to improve expectations, improve compliance, and help the patient actively participate in their own pain management (DiNicola, 2009).

Preoperative patient education that emphasizes what the patient is likely to experience postoperatively is an important aspect in postoperative pain management. This may include assessment methods to be used, pain management interventions, and what the patient can do to actively participate in the management of their pain (Acute Pain Management Guideline Panel, 1992). Preoperative psychological factors have been found to play a part in patients’ experience of postoperative pain. This includes anxiety,
fear, and expectations of pain (Payne, Ghia, & Wilkes, 1995). Educating patients preoperatively about their pain treatment, pain assessment tools, and degree of pain that they might expect is very important when it comes to pain management (Acute Pain Management Guideline Panel, 1992; Bostrom et al., 1997; Carr & Thomas, 1997; Joshi, 1999). This education helps to decrease patients’ anxiety related to fear of the unknown or unrealistic expectations. In fact, educating patients preoperatively has been proven to reduce the pain that they experience in the postoperative phase of nursing care, as well as the amount of analgesia that they require (Bostrom et al., 1997; Dixon, 1993; Joshi, 1999). A useful method to decrease the negative psychological factors that may contribute to postoperative pain is to educate the patient about what is to be expected.

The American Society of PeriAnesthesia Nurses [ASPAN] (2003) has developed pain and comfort clinical guidelines. These guidelines include information related to standards for preoperative patient and family education. Once educational needs are determined, ASPAN (2003) recommends that patients be educated about pain and comfort assessment, including their role in reporting that pain. ASPAN (2003) also recommends that the nurse educator describe analgesic methods that will be used, along with the potential outcomes of these methods. It may be wise to provide education related to myths and misconceptions regarding pain and pain management (ASPAN, 2003).

Another method that aids in reducing postoperative pain is the administration of pain medication preoperatively. Preoperative analgesia administration has been shown to reduce the need for analgesics in the postoperative phase of nursing care (Richmond,
Bromley, & Woolf, 1993). The analgesia helps to impede postoperative pain from becoming fully established. Research has indicated that when compared with patients not premedicated with opioids, those who are premedicated have a longer average amount of time before requesting analgesia in the postoperative phase (Kiss & Killan, 1992). Preoperative administration of opioids is somewhat controversial due to potential side effects (Joshi, 1999). The administration of analgesics preoperatively has also been shown to decrease patient anxiety (Joshi, 1999). This is important because anxiety before the operative procedure has been associated with an increased pain level in the postoperative phase (Fillingim et al., 2009).

In a study by Campbell, Guy, and Banim (1999), the experimental group received additional information preoperatively. This study did not find the expected benefits of providing preoperative education on postoperative analgesia consumption and length of stay in the hospital (Campbell et al., 1999). Some possible explanations described were that the instructional information may have sensitized the patients to their pain or the information provided preoperatively interfered with learning and information recall (Campbell et al., 1999). Therefore, there are conflicting results when it comes to the effectiveness of preoperative education.

**Intraoperative Considerations**

When planning for adequate pain control postoperatively it is essential to take intraoperative interventions into consideration (Acute Pain Management Guideline Panel, 1992; Dixon, 1993; Stomberg et al., 2003). Intraoperative interventions must be taken into account in order to adequately individualize care throughout the operative process.
Intraoperative considerations that may enhance postoperative pain management include proper use of anesthetics, opioids, positioning, splints and casts, and transcutaneous electrical nerve stimulation (TENS). The consideration of these intraoperative interventions increases the need for communication among members of the health care team.

Anesthetics used during the operative procedure play a large role in postoperative pain and subsequent analgesic requirements (Joshi, 1999). Research has indicated that the type of anesthetic used should be taken into account when determining what types of postoperative analgesia will be used (Stomberg et al., 2003). The use of opioids during the intraoperative phase has been shown to decrease immediate opioid requirements in the postoperative phase (Joshi, 1999). However, aggressive use of opioids intraoperatively increases the risk of unwanted side effects postoperatively. These include nausea, vomiting, bladder dysfunction, and sedation (Joshi, 1999). Although opioids have played a large role in perioperative pain management, their side effects may limit their use and contribute to the need for an alternative method (Kehlet, Rung, & Callesen, 1996).

Postoperative use of transcutaneous electrical nerve stimulation (TENS) may require the placement of electrodes intraoperatively (Acute Pain Management Guideline Panel, 1992; Venkateswaran & Prasad, 2006). Once the surgical incision is closed, sterile electrodes are applied to the skin on either side of the incision prior to the application of a dressing over the incision (Venkateswaran & Prasad, 2006). TENS is an example of a non-pharmacologic pain management technique that is controlled by the
patient (Jones & Johnson, 2009). It makes use of a stimulator that delivers low frequency electrical impulses in order to modify pain transmission by stimulating non-pain sensory fibers (Cheing & Hui-Chan, 2003; Jones & Johnson, 2009; Urden et al., 2010). It is viewed as an effective patient controlled analgesic method for some postoperative patients (Rakel & Herr, 2004).

Placement of casts and splints during the intraoperative phase can help to control pain postoperatively (Acute Pain Management Guideline Panel, 1992). Casts and splints immobilize the area that has been operated on, decreasing the level of pain experienced due to the operation (Boyd, Benjamin, & Asplund, 2009; Cuske, 2008). At a predetermined time, the cast or splint can be removed to aid in the rehabilitation process. Casting and splinting relieves pain, but in some cases can increase pain. This is due to swelling underneath the cast or splint related to the surgery and healing process (Boyd et al., 2009; Cuske, 2008). This is normal as long as the pain is not excruciating and the distal skin areas are not white or blue in color (Cuske, 2008).

Patient positioning during the surgical procedure may control the pain experienced postoperatively (Acute Pain Management Guideline Panel, 1992). During intraoperative positioning, the patient is moved and secured into place to create the best view of the surgical site with minimal stress on the joints (McEwen, 1996). Improper positioning or movement during surgery can have adverse affects on the patient, including unnecessary pain. Pressure, friction, and shear forces can lead to unnecessary injury and pain during surgical procedures (Klimek & Grune, 2006; McEwen, 1996). This can injure skin, muscle, and bone structures, which can contribute to increased
discomfort and pain (Klimek & Grune, 2006; McEwen, 1996). Nerve injuries related to improper positioning can cause further pain (Klimek & Grune, 2006; McEwen, 1996).

**Immediate Postoperative Considerations**

During the immediate post operative period, numerous physiological changes are occurring. Many changes occur secondary to the physiology of pain. Anesthetics and other medications administered during the procedure, along with the effects of the surgical procedure itself, also contribute to physiologic changes. Several factors must be considered when providing pain management in this phase of care. It is important for the nurse to check for any signs of intraoperative complications or injuries that could potentially cause the patient additional pain.

Findings by Wu et al. (2005) suggest that the patient’s quality of recovery in the immediate post operative period declines as post operative pain increases. It is necessary to begin pain assessment and documentation immediately in the postoperative phase of nursing care. Initial pain assessment may be difficult due to the residual effects of the anesthetic agents that were administered during surgery (Machata et al., 2009). This may contribute to why pain assessment scales may be unusable or unreliable.

Prevention of pain is always much easier and more desired than the treatment of established pain (Dixon, 1993; Joshi, 1999). Therefore, it is necessary for pain medication to be administered as soon as possible in the post operative phase of nursing care. The optimal time to increase blood levels of analgesia is the immediate postoperative period (Dixon, 1993). This is when the anesthetic from the procedure is dissipating, and the patient is likely to begin to experience pain. It is standard for opioid
therapy to be initiated immediately in the post operative period after the type and amount of analgesia administered intraoperatively has been determined (Joshi, 1999; Venkateswaran & Prasad, 2006). Adequate post operative analgesia without any adverse side effects is especially necessary when it comes to discharge following an outpatient procedure (Joshi, 1999). If a patient is using IV-PCA, the dose of analgesia should immediately begin to be titrated until a therapeutic dose is determined (Dixon, 1993).

Non-pharmacologic methods of pain relief can be applied during this phase. This may include the use of psychological intervention, TENS, and physical techniques (Dixon, 1993). The physical techniques that can be administered immediately in the post operative phase, even prior to the patient being fully alert and oriented are massage, heat applications, and cold applications.

**Methods of Analgesia**

**Factors that Influence Analgesic Requirements**

There are several elements that influence analgesia requirements and consumption. These elements may be related to physiological or psychological aspects of the pain experience. Various patient variables should be taken into account when assessing potential analgesic requirements. These include age, gender, preoperative factors, personality, culture, medical history, site of operation, and health care provider attitudes (Bostrom et al., 1997; Dixon, 1993; Fillingim et al., 2009). This further stresses the importance of holistic care when it comes to assessment of pain and patient assessment in general.

Patient age must be considered. Elderly patients generally require lower doses of
medications (Urden et al., 2010). This is related to physiologic changes associated with
aging. The elderly are also more likely to experience adverse reactions as the result of
“increases in the frequency of drug use, sensitivity to drug effects, and prevalence of
predisposing conditions” (Ray, Griffin, & Shorr, 1990, p. 114). The cause of increased
sensitivity to medications in the elderly population is related to changes in
pharmacokinetics and pharmacodynamics. Pharmacokinetics refers to how the body
metabolizes the medication through absorption, transformation, and excretion, while
pharmacodynamics refers to how the medication affects the person (Ray et al., 1990).
Drug distribution may be altered in the elderly due to increasing lipid content and
decreasing water and lean body mass levels (Shah, 2004). As the elderly population
increases, the issue of proper and adequate geriatric medication administration becomes
increasingly important.

Gender also influences analgesic requirements and consumption. Through
epidemiologic studies, it was discovered that women are at a much greater risk for
various clinical pain conditions and they typically experience more severe postoperative
pain than men (Fillingim et al., 2009). Biological and psychological factors may
contribute to these differences. Male patients tend to expect less pain than they perceive
and female patients expect more pain than they perceive (Campbell et al., 1999). A
review of the recent literature by Fillingim et al. (2009) yielded the finding that
endogenous and exogenous modulation of pain may vary according to gender. Fillingim
et al. (2009) noted that pain reports may vary between men and women due to the fact
that men may not be willing to report pain or request analgesia as readily as women. This
may be related to gender norms due to the fact that men are typically expected to handle pain better than women. It has been implicated that hormones may play a role in pain and pain perception (Fillingim et al., 2009). Pain studies should routinely include members of each gender in order to enhance treatments that will be useful for both sexes. This practice may even yield sex specific interventions.

Preoperative factors have been shown to influence analgesic requirements postoperatively. Preoperative analgesic use may decrease the need for analgesic methods postoperatively (Dixon, 1993). Experience of postoperative pain may be affected by preoperative psychological factors such as anxiety, fear, and anticipation of pain (Joshi, 1999). Providing education to the patient preoperatively may help to alleviate unfounded fears and anxiety about the impending surgery. Preoperative education has actually been shown to decrease the amount of pain a patient experiences and in turn decrease the amount of analgesia that the patient requires in the postoperative phase of care (Bostrom et al., 1997). Overall, preoperative interventions may help to alleviate postoperative pain.

The site of the operation has been found to affect the amount of pain that the patient experiences. Thoracic and upper abdominal operations are associated with the most severe pain postoperatively (DiNicola, 2009; Acute Pain Management Guideline Panel, 1992). Cardiac surgeries that involve a median sternotomy, rather than a thoracotomy, are associated with less pain (Acute Pain Management Guideline Panel, 1992). When it comes to neurosurgery, it is important to remember that the postoperative pain control can not interfere with the assessment of neurologic status (Acute Pain Management Guideline Panel, 1992). Therefore, certain effective pain management
methods may be contraindicated in these patients. Typically, when a patient is undergoing back surgery, chronic pain has been found to be an issue (Acute Pain Management Guideline Panel, 1992). This may contribute to altered pain perception throughout all operative phases. Operative procedures on the extremities typically yield moderate pain (Acute Pain Management Guideline Panel, 1992). Since it is important for ambulation to be initiated early with these patients, the pain management must not interfere with alertness and movement.

The attitude of the health care provider may affect analgesic requirements and subsequent pain relief. Divergent attitudes of the health care provider may account for undertreatment of postoperative pain (Gunningberg & Idvall, 2007). Inappropriate pain management may be related to lack of knowledge and skills or attitudes of health care professionals (Jamison, 2010). Attitude was found to be a barrier to adequate treatment of pain (Sjostrom et al., 2000). Briggs and Dean (1998) determined that the word “complain” was frequently used in documentation when describing patient pain. They suggested that the use of this word may reflect a poor attitude of nurses when it comes to patients who are experiencing pain.

Cultural factors have been shown to influence pain management (Taylor et al., 1998). Cultural differences cause patients to range from being intolerant of any type of pain to accepting pain as a normal part of life (DiNicola, 2009). Some cultures believe that God’s punishment may take the form of pain and should not be relieved (Urden et al., 2010). Other cultures may believe that pain equates to an imbalance in life, and therefore feel the need to change the environment to restore that balance in order to
manage pain (Bozeman, 1996).

A past history of poor pain management may also influence current pain perception and analgesic requirements (DiNicola, 2009). This may cause patients to expect poor pain management following the surgical procedure. It may also lead the patient to either believe that inadequate pain management should be expected or that they need to request more analgesia than they require in order to prevent poor pain management.

**Non-Opioid Medications**

Non-opioid analgesics provide a low tech, low cost approach to pain management (Van den Nieuwenhuyzen, Groen-Mulder, Engbers, & Burm, 2001). Non-opioid analgesics include non-steroidal anti-inflammatory drugs and acetaminophen. Non-steroidal anti-inflammatory drugs (NSAIDs) are non-opioid medications that are used for mild to moderate pain levels (Acute Pain Management Guideline Panel; 1992; DiNicola, 2009). They decrease the level of inflammation at the site of tissue injury by decreasing levels of inflammatory mediators (Acute Pain Management Guideline Panel, 1992; Urden et al., 2010). They have many risks and benefits for the patients that use them. NSAIDs have opioid sparing effects, which decreases the risk of opioid related unwanted side effects (Joshi, 1999; Martens, 1982). When comparing NSAIDs with opioids, it has been found that NSAIDs do not have the same hemodynamic effects, do not cause respiratory depression, and do not cause slowed gastric emptying (Urden et al., 2010). In addition, NSAIDs are associated with less nausea and vomiting, and therefore allow the patient to be discharged sooner (Joshi, 1999). NSAIDs may decrease the risk of breakthrough pain
due to the fact that they have a more prolonged duration of action (Joshi, 1999). However, there are also risks associated with NSAID use. These include gastric irritation, increased bleeding, renal impairment, and slowed or poor healing (Joshi, 1999; Urden et al., 2010).

Acetaminophen is a non-opioid analgesic that can be used for mild pain relief. When compared with NSAIDs, acetaminophen does not have some of the same side effects, such as decreased platelet aggregation or anti-inflammatory properties (Acute Pain Management Guideline Panel, 1992; Urden et al., 2010). Acetaminophen and NSAIDs affect the same pain process, using different mechanisms. NSAIDs have been found to relieve pain through the inhibition of cyclo-oxygenases in the periphery and the central nervous system (Breivik, 2002). Acetaminophen hinders the release of prostaglandins in the spinal cord and affects serotonin mechanisms for pain inhibition (Breivik, 2002; Urden et al., 2010). These different mechanisms produce some variability in the side effects and action of the two different types of medications. Additionally, Acetaminophen can be used in conjunction with NSAIDs to increase the peak effect, duration, and anti-inflammatory effects (Breivik, 2002).

**Opioid Medications**

Opioids produce analgesia by binding to opioid receptors, located not only within the central nervous system, but also outside of it (Acute Pain Management Guideline Panel, 1992). When compared with NSAIDs, opioids are recommended for use when the patient is experiencing a much more severe level of pain. Opioids, supplemented with non-opioids, are the most commonly used method for post operative pain control (Acute
Pain Management Guideline Panel, 1992; Van den Nieuwenhuyzen et al., 2001). The safest way to administer opioids is by titrating the dose until the desired effects outweigh any adverse effects (Acute Pain Management Guideline Panel, 1992). Weighing the adverse effects against the pain relief level will help to determine if the pain relief dose and medication are ideal. Adverse effects of opioids to watch for include nausea, vomiting, unwanted sedation, pruritis, urinary retention, and respiratory depression (Urden et al., 2010; Van den Nieuwenhuyzen et al., 2001). Opioids must be administered carefully due to the fact that the blood concentration-analgesic effect relationship is very steep. Small fluctuations in blood concentrations may lead to great fluctuations in opioid effect (Van den Nieuwenhuyzen et al., 2001). Rather than using an “as needed” order it may be more beneficial to create a regular time schedule for opioid administration, eliminating any prolonged delays between the patient requesting and receiving the analgesic (Acute Pain Management Guideline Panel, 1992).

Opioids have the capacity to be administered using a variety of routes. The least invasive and most cost effective route is oral administration (Acute Pain Management Guideline Panel, 1992). Common orally administered opioids include oxycodone, codeine, and morphine (DiNicola, 2009). According to a prospective observational study by Fosnocht, Hollifield, and Swanson (2004), patients tend to prefer the oral route of analgesic administration. This is partially due to the fact that oral administration of medication causes less discomfort for patients than injections. Oral medications are easier to administer to patients, but may cause a delay in achieving pain relief. When administered orally, the medication goes through additional processes for absorption to
occur. In the immediate post operative phase of nursing care, patients are often unable to swallow the pills due to sedation and the subsequent decreased level of consciousness.

Opioids may be administered via injection. Typically, intramuscular and subcutaneous injections work more quickly than when the medication is administered orally. There are also several disadvantages to this medication administration method. In addition to the obvious fact that injections tend to be somewhat painful, it is difficult to sustain a steady blood concentration with intermittent injections (Acute Pain Management Guideline Panel, 1992). Due to the intermittent action of a nurse controlled injection, there are intervals when the patient experiences break through pain. The breakthrough pain may be related to the patient delaying to ask for the pain medication, delay between request for pain relief and administration of analgesic, and then further delay between the time of injection and onset of pain relief (Urden et al., 2010).

The intravenous route is the ideal route for opioid administration in the post anesthesia care unit. This is due to the rapid onset of action, which minimizes the amount of time that a patient goes without pain relief (Urden et al., 2010; Van den Nieuwenhuyzen et al., 2001). In addition, the patient does not need to be fully alert for the nurse to administer the analgesia this way. When using the intravenous route, medications can either be administered via a bolus or continuous infusion. Although a bolus has a rapid onset of action, the serum level may fluctuate, causing breakthrough pain (Urden et al., 2010). A continuous infusion may provide more consistent pain relief. **Delivery Methods**

**IV-PCA.**
Intravenous patient controlled analgesia (IV-PCA) refers to self administration of an analgesic intravenously via the push of a button connected to a pump (Urden et al., 2010). IV-PCA has been proven to be an effective pain control method (Bostrom et al., 1997; Yimyaem et al., 2006). It is a safe method that is typically preferred by patients over intermittent nurse controlled injections (Acute Pain Management Guideline Panel, 1992; Breivik, 2002; Rathmell et al., 2006). IV-PCA is not recommended for every surgical patient. IV-PCA is most commonly indicated for patients who are at low risk for postoperative complications and will require analgesia for at least two days (Van den Nieuwenhuyzen et al., 2001). Opioids are the medication of choice for use with an IV-PCA pump.

Immediately post operatively, the dose of analgesia should be titrated to determine the proper dosing amount (Dixon, 1993). The dose must be titrated in order to weigh the benefits of the analgesia against the adverse effects. During this time, it is important for the nurse to monitor the patient closely in order to most accurately determine the desired dose. The patient should be thoroughly educated on the use of the IV-PCA pump and any adverse effects that should immediately be reported to a health care provider. Once this is completed and the dose is determined, the patient can begin to control their own analgesia. The patient should initially be monitored in the post anesthesia care unit under the supervision of a nurse in order to further determine if the dose is adequate (Dixon, 1993).

According to several studies, patients tend to prefer IV-PCA over nurse controlled analgesia. The main reason for this is because they enjoy the control that it allows them
to have (Breivik, 2002; Fillingim et al., 2009; Roth et al., 2005). This control over their analgesia allows patients to rely less on the nurses. IV-PCA decreases the amount of time between the request for analgesia and pain relief, when compared with nurse controlled analgesia. It was found that some patients hesitate to “bother” the nurses with requests for analgesia (Breivik, 2002). Since the patient is the only one who truly knows how much pain they are in, IV-PCA gives the patient the opportunity to find the best balance between desired analgesia and unpleasant effects (Breivik, 2002).

Side effects are the same for patient controlled analgesia as compared to when the medication is administered by the nurse (Breivik, 2002). It is important for nurses to remember that it is vital to monitor patients for any adverse effects. Monitoring for changes in vital signs, such as respiratory depression, is especially important.

Self administration of opioids using IV-PCA has been shown to lower postoperative opioid consumption than nurse controlled analgesia (Fillingim et al., 2009). Specifically, women show a lower consumption than men. This may be due to the fact that men may be less willing to report their pain, and therefore self administer more medication than they may have requested from a health care provider (Fillingim et al., 2009).

The need for nurses to accurately predict individualized analgesic requirements has been minimized with the use of PCA pumps (Kleiman, Lipman, Hare, & MacDonald, 1988). An additional benefit is the use of a nighttime background basal infusion when the patient is sleeping and not able to initiate the administration of medication (Dixon, 1992).
Epidural analgesia.

Adequate epidural analgesia may help to make the patient more comfortable in the post operative phase of care. Epidural analgesia is a common pain control delivery method used after abdominal surgery, thoracic surgery, kidney surgery, and major orthopedic procedures (Urden et al., 2010). Epidural delivery of analgesia provides longer lasting pain relief with less opiate use (DiNicola, 2009; Urden et al., 2010). Epidural analgesia helps to relieve pain associated with movement, which helps to speed up rehabilitation and decrease complications (Breivik, 2002). The use of continuous postoperative epidural analgesia leads to improved patient outcomes when compared with parenteral opioids in patients with preexisting cardiovascular and pulmonary disease (Rathmell et al., 2006). It allows patients to breathe deeply and cough more effectively to bring up secretions (Breivik, 2002). Epidural analgesia may help to reduce complications, such as ischemic cardiac events, pulmonary problems, and infections (Breivik, 2002). Therefore, postoperative morbidity is reduced through the use of epidural analgesia. Some complications associated with epidural analgesia include orthostatic hypotension, urinary retention, respiratory depression, itching, nausea, and epidural bleeding and infection (Breivik, 2002).

Non-Pharmacologic Techniques

Along with pharmacologic pain control interventions, non-pharmacologic interventions should also be used. Briggs and Dean (1998) discovered that nurses tend to rely almost solely on pharmacological methods. Instructions for use of non-pharmacologic pain management should be utilized in the post anesthesia care unit in
order to provide the best pain management possible (Bostrom et al., 1997).

Some of the cognitive behavioral interventions that can be used in the post anesthesia care unit include the following: relaxation, imagery, music and distraction (Acute Pain Management Guideline Panel, 1992). These interventions should be used as adjunct methods of pain relief, rather than substitutes for pharmacologic interventions. Relaxation decreases respiratory rate, heart rate, and blood pressure, as well as gives patients a sense of control and reduces anxiety (Urden et al., 2010). Relaxation techniques may include the use of guided imagery. When using guided imagery, the patient visualizes a tranquil place that is free from pain (Urden et al., 2010). This imagery may be guided by a nurse. Music can be used to further relax the patient (Acute Pain Management Guideline Panel, 1992). Furthermore, guided imagery, music, and other activities may be used to distract the patient from the pain they are experiencing.

Physical agents can be used for non-pharmacologic pain management. This includes electroanalgesia, massage, application of heat, application of cold, and acupressure (Acute Pain Management Guideline Panel, 1992). Each of these techniques works to stimulate non-pain sensory fibers in order to modify pain transmission. Electroanalgesia, specifically transcutaneous electrical nerve stimulation (TENS), has been proven to be an effective non-pharmacologic technique (Acute Pain Management Guideline Panel, 1992). TENS is controlled by the patient to stimulate sensory fibers to modify pain experience (Urden et al., 2010).

**Future Considerations and Implications for Nursing Practice**

The nursing profession, along with its unique body of knowledge, is constantly
evolving. It is important for nurses to continually strive for excellence in the profession, which necessitates life-long learning and change that is evidence-based. The preceding systematic review yielded findings that demonstrate various changes that should be implemented related to pain management in the post operative phase of nursing care.

First it is important that nurses develop knowledge and then adopt and implement the use of clinical practice guidelines to direct their practice regarding pain management. QSEN has identified specific knowledge, skills, and attributes that all new nurses should have related to pain management. QSEN (2011) states that nurses should “demonstrate comprehensive understanding of the concepts of pain and suffering, including physiologic models of pain and comfort.” QSEN (2011) also notes that nurses must possess the following skills related to pain: pain level assessment, assessment of level of comfort, assessment of expectations of patient and family, how to initiate effective pain relief treatments. Finally, QSEN (2011) states that the nurse should be cognizant of personally held values and beliefs regarding the management of pain or suffering, appreciate their role in relief of all types of pain or suffering, and recognize that patient expectations influence outcomes in pain management.

It is vital that a therapeutic relationship is developed between the nurse and patient at the beginning of the pain management process. A therapeutic relationship allows the patient to be more comfortable when it comes to voicing their pain concerns. Patient satisfaction with pain management increases as their level of satisfaction with their nurse increases. Therefore, education on interpersonal relationships may be beneficial for nurses in the post anesthesia care unit.
Each healthcare organization must work towards implementing and using standardized assessment tools and pain management. The APS has outlined a standardized pain management plan that each health care facility can implement (McNeill et al., 1998; Roth et al., 2005). Nurses in the post anesthesia care unit should advocate for this.

It may be beneficial for nurses to be further educated on topics related to documentation. It is extremely important for documentation to be accurate and timely. Nurses could even be required to document immediately, rather than at the end of the shift. Technology would allow healthcare organizations to create outcome measures and monitor compliance. According to QSEN (2011), “nurses should use data to monitor the outcome of care processes and use improvement methods to design and test changes to continuously improve the quality and safety of health care systems.”

In order to better make documentation match patient report, the nurse should be sure to pay attention to several things. Health care facilities could also include some of these ideas in their quarterly mandatory training. The nurse should rely less on objective signs of pain and more on subjective signs of pain when available. Nurses should work to enhance their assessment and documentation skills. If pain assessment was more individualized and patient involvement was encouraged, perhaps the patient’s subjective assessment of pain would better match the nurse’s interpretation and documentation.

Using non-pharmacologic pain management techniques more often may also elevate the quality of pain management. As noted previously, nurses tend to rely on pharmacologic techniques for the management of pain. However, several studies have
indicated the effectiveness of implementing non-pharmacologic techniques. Using non-pharmacologic techniques along with pharmacologic techniques has been shown to enhance analgesia. Therefore, non-pharmacologic techniques should be used more, and perhaps nurses should be educated more extensively on them.

Although educational programs have been shown to be effective when it comes to improving nurses’ skills, many studies continue to show deficits in all areas involved (Hartog, Rothaug, Goettermann, Zimmer, & Meissner, 2010). Nurses must therefore work to assure adequate education and nursing practice when it comes to post anesthesia pain management and pain management in general.

**Conclusion**

Nurses in the post anesthesia care unit must first be knowledgeable about clinical guidelines regarding effective pain management. This includes knowledge of the physiology of pain and pain assessment methods. Nurses must use the concept of multimodality by learning to effectively use a combination of pain management techniques to help patients manage their pain effectively. Understanding of pharmacologic and non-pharmacologic methods of pain management in the post anesthesia phase is crucial for safe and effective nursing care of postoperative patients. It is necessary for nurses to accurately assess patients for therapeutic and adverse effects of pain management techniques. In addition to knowing how to assess the pain, administer the pain relief measures, and evaluate their effectiveness, nurses must have an understanding of effective patient education strategies to provide patients and families with information regarding the various pain management methods and tools. Education
must begin with the nurse understanding the various factors that influence analgesic requirements themselves. As in all other areas of nursing, the nurse must care for each patient in a holistic manner, taking all physical, emotional, cultural, and psychological aspects into consideration. Nurses play a critical role in the effective management of postoperative pain. In order to provide effective pain relief strategies, nurses must continually strive to remain knowledgeable about the most current evidence-based practice strategies related to all aspects of pain management.
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