PAIN MANAGEMENT FOR THE PATIENT WITH SUBSTANCE USE DISORDERS

IN THE ACUTE CARE SETTING

by

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DEDICATION

The master’s report is dedicated to my parents and to my husband. To my parents because despite the fact that my parents do not have a university degree they always sacrificed something so my sister and I would get a university degree. My parents gave me the inspiration to reenroll in school and to continue my studies. My parents showed me how far dedication, sacrifice and willingness can take you. To my husband who has been there for me every step of the way, and he has been patient with the lack of time available during the last two years.

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ABSTRACT

Two major problems in today’s healthcare system are adequate acute pain management and the prevalence of substance use disorders in the general population. When these two problems intersect the problem is magnified and represents a challenge for the acute care nurse practitioner. The goal of this paper is to identify how acute pain should be managed in the patient with a substance use disorders, to identify gaps in knowledge on this topic that could be addressed to improve pain treatment in this population. A key to understanding how to treat acute pain in patients with substance use disorders is understanding how the reward centers of the brain are activated and how analgesic drugs can be utilized to minimize activation of these brain areas in patients with substance use disorders are a risk. The literature review described here demonstrates that the use of opioid analgesics (the most commonly used medication for moderate to severe pain) in the acute care setting for patients with substance use disorders in acute pain actually creates very little risk for substance use relapse. In addition, specific strategies exist for using different types of opioids or different routes of administration for these drugs in this population of patients. Therefore, there is a strong rationale for aggressively treating acute pain with opioids in patients with substance use disorders and there are specific prescribing strategies that exist to further minimize risk of relapse. These lines of evidence are contrary to many commonly held misconceptions about treating acute pain in patients with substance use disorders. The research summarized here can play a role in helping acute care nurse practitioners put into place better pain management practices and guidelines for the treatment of this population.
CHAPTER I - INTRODUCTION

The International Association for the Study of Pain (IASP) defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” Pain is always subjective, it can be present in any part or parts of the body and, since it is an uncomfortable feeling, it can affect us emotionally (IASP, 1986, p. 217). Pain is one of the most common reasons why patients seek medical attention (Todd et al., 2007) and 52.2-78% of patients who present to the emergency department (ED) report pain as their chief complaint (Cordell et al., 2002; Johnston et al., 1998; Richards, 2005; Tanabe & Buschmann, 1999).

Inadequate pain management continues to be a critical failing of our health care system despite the advances in understanding the neurophysiology of acute pain (Lindroth, Herren, Falace, & Lexington, 2003) and despite the generally effective analgesics that medical practitioners have at hand (Gilson & Joranson, 2002). Reviews on the prevalence of the undertreatment of pain have shown disparities in the following populations: the elderly, minorities, children, patients with terminal illness or HIV/AIDS, chronic non-cancer pain patients (Gilson & Joranson, 2002), women and in patients with substance use disorders (Askay, Bombardier, & Patterson, 2009; Paulson & Dekker, 2005).

Terminology and Definitions

Terminology

It was noted in the articles reviewed for this paper that authors used different terms to refer to the population that will be discussed in this paper. Some of the terms identified are: substance abuse patient, substance abuser, injection drug user, opiate dependant, addicted
patient, drug seeker, opioid tolerant patient, patients with addictive disease, chemically
dependent, opioid abuse patient and patients with substance use disorders. The term “patient with
substance use disorder (PWSUD)” was chosen for its objectivity, factual basis, and lesser
negative connotation. In addition, this term was selected in consultation with a Clinical Nurse
Specialist certified in acute pain management who was in agreement that this is the most
appropriate term (D. Jarzyna, personal communication, April, 15, 2010). Hence, PWSUD will
be used in this paper to refer to patients who are actively using substances, those patients who are
recovering from substance use disorder, and patients who are on maintenance methadone or
buprenorphine therapy. In fact, the Diagnostic and Statistical Manual of Mental Disorders
(DSM-IV) utilizes the term substance use disorder as an umbrella term for classification of all of
these types of patients (American Psychiatric Association [DSM-IV-TR], 2000)

Definitions

Substance abuse is defined as the “use of any illegal drug such as marijuana, cocaine,
heroin or inappropriate use of a controlled substance such as alcohol or prescription drugs for
recreational purposes or for emotional pain” (Prater, Zylstra & Miller, 2002). According to the
American Society of Pain Management Nursing (ASPMN) (2002), there are three types of
patients with substance use disorders: 1) the patient who is actively using substances, 2) the
patient who is recovering from substance use disorder, and 3) the patient who is on maintenance
methadone or buprenorphine therapy. Again, the term PWSUD will be used to refer to these
three types of patients unless distinctions are made in terms of treatment strategies for the
specific subtype.
Due to the confusion between the terms of addiction, physical dependence and tolerance the American Academy of Pain Medicine (AAPM), the American Pain Society (APS) and the American Society of Addiction Medicine (ASAM) published a Joint Consensus Statement (2001) defining these terms (see Appendix). Addiction differs from substance abuse when the use is uncontrollable, the use continues despite harm and is associated with craving (AAPM, APS, & ASAM, 2001). In fact, substance abuse can lead to addiction due to neurochemical activity in the brain (Hojsted & Sjogren, 2007) and this will be discussed later in detail.

Another term that is commonly confused is the term tolerance (see Appendix for its definition). According to Bourne (2008) there are three main groups where tolerance occurs: patients with chronic pain that are treated with opioids, patients with cancer pain who are treated with opioids, and patients with substance use disorders who develop tolerance to opioids due to their recreational substance abuse or because they are part of a maintenance methadone or buprenorphine program. Not all patients with tolerance develop substance use disorders or are currently addicted to a substance (Iocolano, 2002). This fact is just one of many common misconceptions about tolerance (Iocolano, 2002).

Merriam-Webster (2010) dictionary defines acute care as providing short-term medical care especially for serious acute disease or trauma. In this paper, acute care setting refers to the emergency department, inpatient or hospitalization setting. Pain, in this paper, refers to trauma related pain, post-operative pain or non-cancer pain from an acute medical condition. Pain management in the PWSUD with cancer pain or pain in the palliative care setting is outside the scope of this paper.

Problem Statement
The undertreatment of pain is a major clinical problem and it becomes even more challenging to effectively manage pain in the PWSUD. A survey done in the medical ward patient, at a United Kingdom hospital, found that 54% of patients report pain and 12% of them reported unbearable pain on admission (Dix, Sandhar, Murdoch & MacIntyre, 2004). The findings are similar to a survey done in Chicago, Illinois. That survey assessed 5584 medical hospitalized patients. The results showed that 59% of the patients reported pain and 28% of them reported severe pain (Whelan, Jin, & Meltzer, 2004). In the Chicago survey the patients’ primary diagnoses were asthma, pneumonia, congestive heart failure, urinary tract infection, sickle cell disease, hypovolemia, chronic obstructive pulmonary disease, cellulites of the leg, venous thrombosis, hypertensive renal disease with renal failure and other (Whelan et al., 2004). Therefore, pain and its appropriate treatment is a major medical problem in the acute care setting.

It is estimated that one quarter of hospitalized patients have a substance abuse problem and 40-60% of these patients will have an admitting diagnosis that is related to trauma (Grant, Cordts, & Doberman, 2007; Rosenblatt & Mekhail, 2005). Moreover, PWSUD admitted with acute pain are significantly more likely to receive inadequate pain management compared to those patients without a substance abuse disorders (Gilson & Joranson, 2002; Grant et al., 2007; Rosenblatt & Mekhail, 2005; Savage, Kirsh, & Passik, 2008).

The intersection of pain treatment and substance abuse compounds the problem of effective pain management across clinical settings. Achieving a better understanding of how these two issues intersect has the potential to lead to more effective management of pain issues in a large number of PWSUD.
Background

The Substance Abuse and Mental Health Services (SAMHS) conducts an in-person interview annual survey called the National Survey on Drug Use and Health. The survey assesses substance use disorders among Americans who are 12 years old and older (National Institute of Drug Abuse [NIDA], 2010). In 2008, 22.2 million people, or 8.9% of the American population, who are 12 years and older were classified with a substance use disorder (SAMHS, 2009). The survey asks a series of questions to identify those who have had a substance use disorder in the past 12 months. The survey assesses for alcohol, marijuana, cocaine, heroin, hallucinogens, inhalants and opioids use for recreational purposes. The survey also compared the results of the years 2002-2008 and it was determined that the numbers are consistent across these years (SAMHS, 2009). The SAMHS survey (2009) demonstrates that substance use disorders constitute a major health problem affecting the United States population. Due to the high prevalence of this problem, the likelihood that a person with substance use disorder will present in the acute care setting is high.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO), in a two year collaboration with University of Wisconsin and Madison Medical School, developed the 2001 Standards for Pain Assessment and Pain Management (JCAHO, 2009). The standards were developed with the purpose of improving pain management in hospitals, home health, emergency departments, long term care facilities and ambulatory care centers among many other US health care facilities (Berry & Dahl, 2000). The pain assessment and pain management standards that JACHO has mandated health care facilities follow are shown in Table 1.
Despite the implementation of these guidelines the undertreatment of pain continues to be a problem in the acute care setting, including in those patients with post-operative pain, trauma pain, cancer pain and chronic non-cancer pain (Dekel, Melotti, Carosi, Spnelli, D’Andrea, 2008). Patients across the health care systems suffer from the undertreatment of pain especially those who have a substance use disorder. Due to this continuing problem of undertreatment of pain, in October 2004 the World Health Organization (WHO), IASP and the European federation of the IASP chapters (EFIC) declared adequate pain treatment as a basic human right (Brennan, Carr, Cousins, 2007). According to Bond et al. (2006), it is the moral and legal obligation of civilization, health care providers and health care policy makers to influence and advocate for the goal of decreasing pain in the world.

Significance of the Problem

The American Society for Pain Management Nursing (2002) and several authors (Basu, Bruce, Barry & Altice, 2007; Prater, Zylstra, & Miller, 2002) recommend that acute pain should be treated regardless of the patient’s history of substance use disorders. Under-treatment of pain may result from both practitioner and/or patient fear of the addictive potential of opioids and/or from practitioner lack of knowledge regarding appropriate ways to treat pain in PWSUD (Grant et al., 2007; Hopper and Shafi, 2002; Paulson & Dekker, 2005; Evans & Hackman, 2005). Unfortunately, the undertreatment of pain has a number of negative sequelae for patients. For example, patients with under-treated pain have longer hospital stays, more frequent readmission rates and increased outpatient and ED visits (Grant et al., 2007; Hopper & Shafi, 2002). Inadequate post-surgical pain management has been associated with increased risk of myocardial infarction, bleeding (Brennan et al., 2007; Patanwala, Jarzyna, Miller & Erstad, 2008), stroke
(Brennan et al., 2007), fear and anxiety, increased production of carbon dioxide and decreased immune function (Patanwala, et al., 2008). In addition, a large number of basic science and clinical studies have established that the under treatment of acute pain can lead to a transition to chronic pain (Bond et al., 2006; Brennan, Carr & Cousins, 2007; Malchow & Black, 2008; Tamches et al., 2007). This points out the critical necessity of adequate pain control in all patients including those with a substance use disorders. Perhaps if health care providers viewed substance abuse disorder as the chronic disease that it is and approached it in the same manner that hypertension or diabetes is treated it would be easier for health care providers to overcome their fear of controlling acute pain with appropriate treatments (Hopper & Shafi, 2002).

Moreover, paradoxically, inappropriate pain control is often a significant risk factor for relapse because it may motivate substance abusers to self medicate with their drug of choice (Prater et al., 2002; Paulson & Dekker, 2005; Grant et al., 2007). Finally, and perhaps most importantly, the undertreatment of pain causes needless suffering.

Barriers to Pain Management

The literature reveals that the most common barriers to adequate pain treatment in the PWSUD are health care provider negative attitudes towards substance abuse patients (Grant et al., 2007; Iocolano, 2000; Morgan, 2006; Passik & Kirsh, 2004), system barriers (Broyles & Korniewicz, 2002; Grant et al., 2007; Iocolano, 2000; Paulson & Dekker, 2005; Prater et al., 2002), lack of knowledge and skill on how to manage pain in this population (Berry & Dahl, 2000; Green, Wheeler, Marchant, LaPorte, Guerrero, 2001; Iocolano, 2000; Morgan, 2006; Paulson & Dekker, 2005), fear of perpetuating substance use disorder when treating pain with opioids (Berry & Dahl, 2002; Grant et al., 2007; Iocolano, 2000; Morgan, 2006, Paulson &
Dekker, 2005), and fear of side effects such as sedation and respiratory depression (Grant et al., 2007; Berry & Dahl, 2000).

**Attitudes towards patients with substance use disorders**

PWSUD often encounter an ethical and legal stigma (Grant et al., 2007; Passik & Kirsh, 2004) and health care providers may feel that a patient is attempting to deceive them when a PWSUD asks for higher dosages of opioids (Iocolano, 2000). This may cause an atmosphere of mistrust, distress and frustration between the practitioner and the patient (Broyles & Korniewicz, 2002; Iocolano, 2000). The hospitalized patient with a substance use disorder can become aware of the biased treatment and may detect that the staff does not respect them as an individual (Grant et al., 2007). Some of these patients may be suffering from inadequate pain relief and their demanding behavior may stop if pain relief is achieved -- a phenomenon referred to as pseudoaddiction (Grant et al., 2007). Since, the patient who is in pain can exhibit demanding behavior that can influence the provider’s attitude towards the substance abuse patient. Health care providers should ask themselves: is this behavior pseudoaddiction or is it indicative of substance use disorder.

**System barriers**

Practitioners may fear legal repercussions for prescribing too many opioids (Broyles & Korniewics, 2002; Prater et al., 2002). A common misconception is that the Uniform Controlled Substance act of 1970 regulates opioid use for pain, when in fact it controls the use of opioids for the substance use disorder treatment/rehabilitation (Prater et al., 2002). In 1979 the Psychotropic Substance Act explicitly amended the Controlled Substance Act by prohibiting restrictions on opioid prescribing for relief of pain (Prater et al., 2002, p. 127). When prescribing opioids for the
use of pain relief, practitioners should base their decisions on accepted medical standards such as the WHO’s (2010) stepladder approach (see Table 2) where opioid therapy is indicated for moderate to severe pain.

A system barrier that has been identified in the cancer pain population but which is also potentially applicable to the PWSUD population is breakdown in continuity of care. Redmon (1997), in a review article, states that cancer pain patients are generally cared for in several different health care settings and being cared for by different practitioners. Even though the patient is being cared for many practitioners no one wants to take the over all responsibility of managing the patient’s pain. This frequently means that these patients lack continuity of care in their pain treatment. Another flaw in continuity of care is that there is no guarantee that another practitioner will follow the pain management suggestions from a practitioner. For example: if the patient is being discharged from the hospital on a pain regimen there is no guarantee that the primary care physician will follow the same pain regimen. This lack of continuity in the PWSUD can create a major problem because lack of adequate pain treatment can cause substance use relapse (Paulson & Dekker, 2005; Grant et al., 2007).

Another system barrier that the PWSUD may encounter in the inpatient setting is a delay in opioid administration when in need of pain relief (Grant & Doberman, 2007). One of the roles of the inpatient pharmacist is to detect dosage errors prior to releasing the medication to nurses for administration (Grant & Doberman, 2007). Since the PWSUD requires larger doses of analgesics to treat their pain due to pre-existing opioid tolerance (Broyles & Korniewicz, 2002; Grant & Doberman, 2007; Iocolano, 2000; Prater et al., 2002) the inpatient pharmacist may detect this large dosage as a dosage error. The inpatient pharmacy then may not release the
medication to the nurses to administer until the inpatient pharmacist double checks the dosage with the prescriber. To avoid a delay in opioid administration to the PWSUD in the acute care setting, the ACNP can call the inpatient pharmacist in advance to explain why a large dose of opioids has been ordered and to clarify that the large dose is not a dosage error.

Another system barrier commonly encountered by inpatient practitioners is lack of appropriate follow-up care and community resources after discharge from the hospital (V. LeBaron, personal communication, April, 13, 2010). Some PWSUD do not have established primary care physicians or do not have access to one, due to lack of health care insurance (Grant et al., 2007). Similarly to continuity of care, this can create a situation where the PWSUD is unable to maintain adequate pain relief which has the potential to lead to relapse (Paulson & Dekker, 2005; Grant et al., 2007).

*Lack of knowledge and misconception of opioid treatment*

Specific education in pain management in the PWSUD population is generally not part of the basic education of health care professionals—either for nurses or physicians (Broyles & Korniewicz, 2002; Evans & Hackman, 2005; Iocolano, 2000; Paulson & Dekker, 2005; Polomano, Dunwoody, Krenzischek, Rathmell, 2008). McCaffery & Robinson (2002) surveyed 3282 nurses. The purpose of the survey was to explore nurses’ knowledge on pain assessment and pain treatment. The survey results showed that the majority of the respondents did not have basic knowledge of pain management, with only 42.2 % answering at least 80% of the questions correctly. Questions related to pain and substance use disorders had the highest percentage of incorrect responses. For example, 53.9 % of the nurses believed, erroneously, that the likelihood of substance use disorder increases as a result of giving opioids for acute pain. Also, the authors
found that 15.6% of nurse respondents had an exaggerated fear of addiction as indicated by their response that 25% or more of patients who receive opioids will become addicted to them. Patients will develop tolerance (see Appendix for definition) when they have been exposed to opioids for longer than two weeks but they rarely develop substance use disorders from opioid use for pain (Bourne, 2008; Li, 2002).

In reality, research has shown that only 1% of patients without a substance use disorder and who receive opioids for pain in the acute setting will develop addiction (Li, 2002). For example, The Boston Collaborative Drug Surveillance Project has shown that only 4 out of 11,882 hospitalized patients receiving opiates for pain without a history of substance abuse developed substance use disorder (Porter & Jick, 1980). No additional information was provided in this study that suggests why these 4 patients were at particular risk to develop substance use disorder and the patients were not assessed in advanced if they had a substance use disorder prior to hospitalization. Perry & Heidrich (1982) conducted a survey of physicians and nurses in 93 burn units. The survey was answered by 181 physicians and nurses with extensive experience with burn patients. Perry and Heidrich (1982) did not report the total number of patients assessed but they concluded that the overall experience of the respondents accounted for at least 10,000 hospitalized burn patients. Interestingly, in the survey not one case of iatrogenic substance use disorder was reported for any of the hospitalized burn patients cared for by the physicians and nurses. They did identify 22 patients who subsequently developed substance use disorders and all of these patients had a prior history of substance use. However, the study did not identify the incidence of a substance use history in the entire population of burn patients evaluated in the study. Based on the incidence of substance use disorders in the acute care setting described
above (Porter & Jick, 1980; Perry & Heindrich, 1983) and in the general population (SAMHS, 2009), even a conservative estimate would still indicate that only a small proportion of patients with a prior history of substance use disorder would again develop a substance use disorder.

Unfortunately, there are no research studies that have successfully evaluated how many patients with a history of substance use disorder developed addiction or relapse after acute pain treatment with opioids (Savage et al., 2008). The majority of the studies have assessed only opioid use in patients who do not have a substance use disorder (Savage et al., 2008; Pasik, 2004). Furthermore, as discussed above, PWSUD may relapse simply because their pain is not adequately controlled (Paulson & Dekker, 2005; Grant et al., 2007).

_Fear of side effects_

Health care providers may avoid administering opioids due to the fear of sedation and respiratory depression (Grant et al., 2007). Opioid-induced respiratory depression has been found to occur in less than 1% of patients receiving opioids (Zimmerman, 2004). Patients who are at higher risk for these side effects are generally opioid naïve patients, and _not_ those who have developed tolerance due to either substance use disorders or previous medical opioid use (Grant et al., 2007). It is essential that medical professionals assess for sedation level, since sedation will occur prior to respiratory depression (Zimmerman, 2004). Patients who are in pain and breathing faster than 10 breaths per minute are at lower risk to develop respiratory depression (Grant et al., 2007). Hence, although respiratory depression and sedation can be concerns when using opiates during hospitalization, the PWSUD is actually at lower risk for these adverse side effects.
Summary

Pain is one of the most common reasons why patients seek medical treatment and pain is highly prevalent in patients in the acute care setting. It is estimated that 8.9% of the American population has a substance use disorder (SAMHS, 2009) and health care providers will likely have multiple encounters with a PWSUD who is in pain. The PWSUD in pain often receives suboptimal pain management due to stigmas that exist towards them. It is imperative that health care providers overcome the fear that their patients will develop a substance use disorder when the treatment of pain with opioids is warranted because this can actually help prevent relapse (Paulson & Dekker, 2005; Grant et al., 2007). It is important that health care providers are educated regarding appropriate pain management strategies in this population to improve pain management in these patients.
CHAPTER II - LITERATURE REVIEW

Purpose

The overall purpose of this literature review is to: 1) investigate the appropriate pain management strategy in the acute care setting for the PWSUD; 2) identify the gaps in knowledge on the topic of pain management in the acute care setting in patients with substance use disorders; and 3) identify the significance for the acute care nurse practitioner in addressing this problem.

Specific questions to be addressed, as identified as major themes in the review of the literature, include: 1) what is the neurophysiological mechanism of reward; 2) what are the identifiable risk factors for opioid addiction; 3) what is the appropriate way to identify the PWSUD; 4) what is the appropriate pain management in the PWSUD; 5) which type of medication should be prescribed for the PWSUD in acute pain; 6) how does depression and anxiety affect pain; and 7) what are the discharge considerations for the PWSUD.

Literature Search Methods

The librarian from the Arizona Health Science Library guided the initial systematic literature review search. A MEDLINE (PubMed) search was conducted under the medical subject headings (MeSH) of “analgesia”, “substance related disorders”, “hospitalization”, and “pain”. The inclusion criteria were “substance use disorder”, “acute pain”, “hospitalization”, “peri-operative pain”, and “pain in acute medical conditions”. The exclusion criteria were “chronic pain”, “cancer pain”, and “outpatient setting”. Different combinations of MeSH terms were utilized during the search. The first MeSH term search combination was “substance related disorders” and “analgesia”. The search resulted in 358 articles with only 5 articles being relevant
to the topic. The second MeSH term search combination was “pain”, “substance related disorders” and “hospitalization”. The search resulted in 55 articles with only 1 article being relevant. In addition to the MeSH term search in MEDLINE (PubMed) a keyword search was conducted in the same database. The keywords searched included “acute pain”, “opioids”, “addiction”, “pain management”, “substance use disorder” and “substance abuse”. The keyword search combination was “acute pain”, “opioids”, and “addiction”. The search resulted in 107 articles and only 7 relevant articles were selected. Another keyword search combination was “pain management” and “substance abuse”. The search resulted in 96 articles which were reviewed and 6 relevant articles were selected. Since only 17 relevant articles were found using all of these search terms, the supporting reference lists of all of these 17 articles were reviewed to obtain further references that were utilized in this literature review.

The Neurophysiological Mechanism of Reward

In order to properly treat patients with a substance use disorders who are in pain in the acute care setting we must understand the neurophysiological mechanism of reward. Addiction is considered a chronic disease of the brain that is influenced by genetic, social and environmental factors (AAPM, APS & ASAM, 2001; Hojsted & Sjogren, 2007). It is believed that the development of addiction is due to the neurochemical activation of the brain reward center. The release of dopamine in the brain induces reward and this is generally accompanied by a feeling of euphoria (Hojsted & Sjogren, 2007). The reward center is located in the limbic system and is composed largely of the nucleus accumbens, located in the basal ganglia, which receives inputs from a brainstem area called the ventral tegmental area which is rich in dopaminergic neurons. The nucleus accumbens sends outputs to the orbitofrontal cortex and this cortical area is involved
in drug craving (Koob & Nestler, 1997; Savage 2002; Savage et al., 2008). The use of opioids or other illegal drug use releases dopamine in the nucleus accumbens and/or prefrontal cortex (Hojsted & Sjogren, 2007). The reward system is modulated by several neurotransmitters such as GABA, endorphin, glutamine, norepinephrine, dynorphin and cholecystokinin (Hojsted & Sjogren, 2007; Koob & Nestler, 1997). The use of a specific drug of abuse activates the reward system in different locations of the brain. For example, amphetamine, cocaine, opiates, marijuana, phencyclidine, ketamine and nicotine act in the nucleus accumbens while opiates, alcohol, barbiturates and benzodiazepines act in the ventral tegmental area (Koob & Nestler, 1997). Even though different substances activate the reward system in different parts of the brain, all drugs of abuse increase the release of dopamine in the nucleus accumbens (Hojsted & Sjogren, 2007). GABAergic interneurons are found throughout the brain and their function in the ventral tegmental area is to inhibit dopaminergic neurons. When individuals take opioids there is an increase of dopamine release because of inhibition of GABAergic neurons (this neurophysiological event is called disinhibition) causing the feeling of euphoria and inducing reward (Koob & Nestler, 1997; Hojsted & Sjogren, 2007; Savage et al., 2008). It is believed that addiction develops due to the recurrent release of dopamine which causes the euphoric feeling when using a substance and this is more prevalent in patients who are at risk for developing a substance use disorder (Savage, 2002). Those who are at risk for opioid substance use disorder will be discussed in depth in the next section.

Risk Factors for Substance Use Disorder

Interestingly, there are individuals lacking a predisposition to develop substance use disorder despite their exposure to drugs that activate the reward system (Savage, 2002; Savage et
al., 2008). The risk factors for opioid substance use disorder are genetics (Hojsted & Sjogren, 2007; Savage, 2002; Rosenblatt & Mackhail, 2005; Webster, 2004), personal history of substance abuse (Hojsted & Sjogren, 2007; Savage, 2002; Webster, 2004), personal history of preadolescent sexual abuse (Webster, 2004), psychological disease such as anxiety, depression and mood disorders (Hojsted & Sjogren, 2007; Rosenblatt & Mackhail, 2005; Webster, 2004) and lack of family support (Rosenblatt & Mackhail, 2005). In addition, it is important to understand that when acute pain is present the euphoric effects of opioids are decreased (Alford, Compton, & Samet, 2006; Gourlay & Heit, 2008) and this may decrease the risk of opioid addiction even in people with risk factors (Gourlay & Heit, 2008). Practitioners should understand these predisposition factors for the development of opioid addiction and should know the effect of opioids in the reward system in order to better treat PWSUD. When practitioners understand how the reward system functions they must think of what other option can be implemented to reduce the negative impact on their patients (Savage et al., 2008).

Identification of the Patient with Substance Use Disorders

The literature review encountered several tools that are used to detect PWSUD. Although the screening tools were initially developed to assess for alcohol abuse only, some tools have been modified for identification of PWSUD across substances.

CAGE-AID

The CAGE-AID question is composed of four “yes” and “no” questions that are asked during an interview and takes less than 1 minute to administer (Webster, 2004). The four questions are: C) “Have you felt you ought to cut down on your drinking or drug use?” A) “Have people annoyed you by criticizing your drinking or drug use?” G) “Have you felt bad or guilty
about your drinking or drug use?” E) “Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to the get rid of a hangover (eye-opener)?” (Brown & Rounds, 1995). Two positive answers to the questions are considered a positive screening and one positive question response warrants further investigation (Brown & Rounds, 1995; Savage, 2002). The questionnaire was initially developed for alcohol screening only and it was called the CAGE screening tool (Ewing, 1984). After several years it was adapted to assess for substance abuse by adding at the end of the questions: “or drug use?” The name was then changed to CAGE- (CAGE-AID) (Brown, Leonard, Saunders, & Papasouliotis, 2001). The CAGE-AID was validated in medical, surgical and orthopedic inpatients and it was found to be more sensitive and specific than the CAGE in assessing substance use disorders (Brown, Leonard, Sanders & Papasouliotis, 1998). The CAGE-AID assessment tool was recommended in the literature review by several authors (Hopper & Shafi, 2002; Iocolano, 2000; Savage, 2002).

**Cyr-Wartman screen**

The Cyr–Wartman screen is composed of two questions: “Have you ever had a problem with alcohol (or drugs)? And, when was your last drink (or drug use)? A positive screening is when the answer is yes to question one and if they report use within the last 24 hours for question two (Cyr & Wartman, 1988).

**Two-Item conjoint screening tool**

The Two-Item Conjoint Screening tool (TICS) was developed with the intention of detecting those with a history of alcohol and substance abuse (Brown et al., 2001). The TICS tool is composed of two questions: “In the last year, have you ever drunk or used drugs more than you meant to?” and “Have you felt you wanted or needed to cut down on your drinking or
drug use in the last year?” (Brown et al., 2001, p. 103). The tool was developed for the primary care patient, has an 81% sensitivity and specificity (Brown, et al., 2001) and takes less than one minute to administer. One or more positive answers indicates the need for further assessment to evaluate a patient’s alcohol or drug use (Brown, et al., 2001).

**WHEW screening tool**

The acronym WHEW can help guide the practitioner to assess details about the patients drug use and to assess of previous withdrawal experience if admitted: “Which: Which substances and what route are used? How: How much is used and how often? Extend: What is the length of use and when was the last use? Withdrawal: What is the history of or current withdrawal?” (Broyles & Korniewicz, 2002, p. 438). It is important to find out how much, how often and what is the patient’s drug of choice to assess for risk of withdrawal since the patient who is actively using substances is at a higher risk for developing withdrawal during hospitalization (Hopper & Shafi, 2002). Withdrawal syndrome is characterized by symptoms experienced when the regular use of an illicit drug, opioid, medication or alcohol are discontinued (McKeown & West, 2010). Alcohol, benzodiazepines and barbiturates withdrawal can be life threatening (Broyles & Korniewicz, 2002; Hopper & Shafi, 2002) and opioid withdrawal can be life threatening as well when there is a history of cardiovascular disease (Hopper & Shafi, 2002). Alcohol, benzodiazepine and barbiturate withdrawal is characterized by shaking and sweating and when not controlled can lead to seizure (Broyles & Korniewics, 2002). Opioid withdrawal symptoms include nausea, vomiting and diarrhea along with shaking and sweating (Broyles & Korniewics, 2002; Mckeown & West, 2010; Tetrault & O’Conner 2008). Refer to Table 3 for common substances of use with corresponding withdrawal syndromes.
Savage (2002) cautions that these are screening tools to detect the possibility of alcohol and drug abuse, but that these tools are not diagnostic tools for substance use disorders. It is important to note that utilizing any of these tools is a step forward from merely assessing a patient based on subjective impressions.

**Objective information**

Objective information that can be suggestive of a substance use disorder can be collected through observation, examination, and laboratory test studies. Savage (2002) listed common physical and laboratory findings that can be suggestive of substance abuse (Refer to Table 4). Prater et al., (2002) compiled a list of maladaptive behaviors or aberrant behaviors that suggest active substance use disorder (Refer to Table 5), and although this list was initially developed for the outpatient population, these behaviors can also be observed in the inpatient population. Examples of the maladaptive behaviors include: selling drugs, requesting specific drugs, obtaining drugs from non-medical sources, concurrent abuse of alcohol, unwillingness to try non pharmacological therapies (ice, heat, massage), evidence of using illicit drugs and overwhelming worry to be prescribed available dosages of opioids. Worry about opioid prescribing needs special attention because this can be easily confused with pseudoaddiction. More indicative of substance use disorder is the existence of a pattern of behaviors rather than the existence of only one maladaptive behavior (Prater et al., 2002). The practitioner may have difficulty determining if the patient has a substance use disorder and the most reliable piece of information is when the patient openly talks about their history of substance use disorder and admits to the practitioner that they have a substance use disorder (Savage, 2008).
Interview

During the interview process a detailed assessment of all medications and the possibility of a substance use disorder should be acquired before the development of the treatment plan and the questions should be asked in a non-judgmental, (Broyles & Korniewicz, 2002; Grant & Doberman, 2007; Hopper & Shafi, 2002; Iocolano, 2000; Mitra & Sinatra, 2004; Savage 2002; Trame, 2002), empathetic (Broyles & Korniewicz, 2002) and open manner (Bourne, 2008; Grant & Doberman, 2007; Iocolano, 2000; Passik & Kirsh, 2004). Several authors have agreed that when the history of substance abuse is asked in a non-judgmental manner the patient is more comfortable sharing the information and they are more likely to trust the practitioner (Savage, 2002: Passik & Kirsh, 2004). The question should be asked assuming that the patient is using and by exaggerating the amounts of use (Grant & Doberman, 2007; Savage, 2002; Savage, 2008). For example: “When was the last time that you used marijuana?” and “Do you drink about one or two cases of beer on a Friday night?” (Savage, 2002, p. S32). It is believed that by asking the question in this manner the patient will feel comfortable reporting heavy use (Grant & Doberman, 2007).

Appropriate Pain Management in the Patient with Substance Use Disorders

The patient who is actively using substances

Once it is determined that a patient is actively using substances it is important to assess for and treat withdrawal symptoms (Broyles & Korniewicz, 2002; Hopper & Shafi, 2002) because this has an impact on pain and overall medical treatment. For example, in a review article, Broyles & Korniewicz (2002) discussed the challenges that practitioners encounter when caring for the PWSUD with the admitted diagnosis of endocarditis. They pointed out that the
antibiotic regimen could be cut short if the patient leaves the hospital against medical advise due to inadequate pain management and/or suboptimal withdrawal treatment. Obviously, this can create a serious medical issue and it exemplifies how pain treatment, withdrawal management and medical issues intersect in the PWSUD.

Practitioners must understand how to treat withdrawal and pain concurrently. In acute pain situations opiates are indicated to treat pain adequately (Prater, et al., 2002; Savage & Horvath, 2009). Withholding opioids for analgesia in PWSUD was not mentioned in the literature review even in the context of active withdrawal. Savage et al. (2008) states, “carefully supervised short-term use of opioids in the context of time-limited treatment of such pain has not been documented to affect the long term course of addictive disorders,” (p. 10). The patient with active substance use disorder should be assessed for the risk of withdrawal. If the patient’s symptoms of withdrawal are minor and the pain is severe the pain should be treated first as substance use disorder treatment/rehabilitation at this time is not the priority (Broyles & Korniewicz, 2002; Prater et al., 2002). On the other hand, severe withdrawal symptoms may impede the possibility to control pain (Broyles & Korniewicz, 2002; Prater et al., 2002; Savage & Horvath, 2009). Prater et al., (2002) recommends the use of methadone 15-20mg/day to treat the withdrawal symptoms plus additional opiates to treat the pain. Although, it is important to note that special licensing is required when prescribing methadone for the treatment of withdrawal syndrome (Savage & Horvath, 2009). Savage et al. (2008) points out that even though methadone is an effective analgesic it requires expertise and close monitoring. Methadone is a potent drug that has a slow onset and long half-life, making it challenging to titrate for analgesia and puts patients at risk for overdose (Savage et al., 2008).
In some situations, for instance scheduled surgery, practitioners can take steps ahead of time to avoid withdrawal and pain issues in PWSUD. Several authors (Broyles & Korniewicz, 2002; Evans & Hackman, 2005; Iocolano, 2000; Savage & Kirsh, 2004) recommend reassuring the patient that all the necessary steps will be taken to prevent drug withdrawal and preoperative admission should be considered to stabilize their drug regimen (Evans & Hackman, 2005; Savage & Kirsh, 2004). In addition, patients should be reassured that their substance use disorder will not prevent them from receiving adequate pain treatment (Broyles & Korniewicz, 2002; Evans & Hackman, 2005; Lindroth et al., 2003).

PWSUD who are admitted to the hospital should be placed close to the nurse’s station to monitor them and to discourage the temptation to leave the hospital to buy illicit drugs. All visitors should check in at the front desk or providers should prohibit any visitors during this period. During the hospitalization period the pain must be reassessed frequently and pain management should be optimized (Iocolano, 2000; Savage & Kirsh, 2004). Pain can be assessed by asking for pain ratings on a 1 – 10 scale on a regular basis. Specific strategies for managing pain such as giving opioids for moderate to severe pain in combination with a non-opiod (for example: non steroidal ant-inflammatory drug (NSAID) or acetaminophen if not contraindicated) or a non-pharmacological therapy (for example: hot and/or cold compress) and scheduled dosages around-the-clock rather than pro re nata are indicated for the treatment of pain of the PWSUD. Understanding that PWSUD may have tolerance due to previous exposure to substance use and may require larger dosages of opioids to relieve pain is critical to managing pain in this population. Also, invasive procedures such as regional blocks in the post op or trauma patient should be considered because they are also effective analgesic strategies that do not have abuse
potential. More strategies for optimizing pain treatment in PWSUD will be discussed in more detail below. Also, it has been recommend to obtain a daily urine specimen to verify that the patient is not taking any other drugs while he or she is in the hospital (Evans & Hackman, 2005; Savage & Kirsh, 2004). Savage & Kirsh (2004) suggest that all these limitations should be explained to the patient on day one and that they should be told that these management issues are in their best interest. Sometimes, despite these strategies, patients will fail to comply and discharge should be considered (Savage & Kirsh, 2004). McCraffey (n.d.) presented an example of an opiate contract for IV PCA for a hospitalized patient who is actively using substances but elaborates that it is not always advisable (Refer to Table 6). Since, research has not established that acute pain management will be improved or the patient will actually will adhere to the treatment plan (McCraffey, n.d.).

The literature review demonstrated that changing behavior resulting from substance use disorders is appropriate to be discussed during the hospitalization period after the reason for admission has been stabilized and pain management is adequate (Broyles & Korniewicz, 2002; Gentilello, Donovan, Dunn & Rivara, 1995; Hopper & Shafi, 2002). The plan to implement an intervention program can be initiated by pointing out the negative effects of substance abuse, especially if the hospitalization or emergency visit was caused by the use of alcohol and/or an illicit drug, (Broyles & Korniewicz, 2002), for example, abscess due to intravenous drug abuse or a motor vehicle accident due to intoxication. The tone of voice that should be utilized during this conversation should be calm showing empathy and concern (Broyles & Korniewicz, 2002). In the case that the patient is not ready for an intervention, the practitioner should offer the
patient a list of resources such as the 12 step program (e.g. Narcotics Anonymous (NA) in case the patient changes his/her mind (Broyles & Korniewicz, 2002) at a later time.

*The patient who is recovering from substance use disorder*

Lindroth et al. (2003) developed guidelines for acute dental pain in the recovering alcoholic patient (Table 7). In the guidelines Lindroth et al. (2003) recommends the practitioner to “encourage the patient to intensify involvement in recovery programs” (p. 433). The practitioner should learn about the processes that helped the patient overcome the physical and psychological dependence, how active the patient is in utilizing support groups such as Alcoholics Anonymous, how often the patient obtains support from his or her counselor, and how often the patient is in contact with his or her counselor (Savage, 2002; Savage et al., 2008). In addition, the practitioner should ask the patient directly about how stable he or she feels in their recovery. These details will influence the plan of care during the acute pain period, although it is important to note that this may be difficult to implement in the emergency department due to time constrictions.

The literature recommends for patients to continue with their 12-step program and to continue to be in close contact with their counselor (Iocolano, 2002; Lindroth et al., 2003, Savage, 2002; Ziegler, 2005). In some cases where the patient did not use any support programs and achieved alcohol abstinence independently the literature shows that this patient is at greater risk for relapse (Lindroth et al., 2003; Ziegler, 2005). In this case it would be optimal for patients to have close follow up with their primary care physician. Unfortunately, as mentioned above this is a system barrier that may affect this population.

*The patient who is on maintenance methadone or buprenorphine therapy*
Patients who are on maintenance methadone should receive their usual daily dose plus the opioids that are necessary for adequate pain management (Hopper & Shafi, 2002; Iocolano, 2000; Mitra & Sinatra, 2004; Prater et al., 2002; Savage et al., 2008). One approach suggested by Iocolano (2000) is to increase the methadone dose until analgesia is achieved. However, this practice should be implemented only by practitioners who have received the proper training in methadone use for pain (Savage et al., 2008). Savage et al., (2008) disagrees on increasing dosages of methadone for the treatment of acute pain in this context, because it is easier to differentiate which medication was prescribed for pain, and it is easier to taper off the additional medication prescribed for pain once pain resolves.

Both Savage et al. (2008) and Alford et al. (2006) suggest that a pain specialist should be consulted when managing acute pain in the buprenorphine-maintained patient. Buprenorphine-maintained patients are approached slightly differently because buprenorphine is a high affinity partial agonist at opioid receptors so it is capable of blocking the effects of other opioids that may be prescribed for analgesia (Savage et al., 2008).

The literature recommends that patients who will have elective surgery and are on buprenorphine therapy should stop buprenorphine therapy for a few days prior to surgery. In case the patient develops withdrawal from the discontinuation of buprenorphine adding methadone should be considered. In patients who have an unplanned event such as appendicitis or a fall causing a fracture a mu opioid agonist, such as morphine, fentanyl, or hydromorphone, should be given (Alford et al., 2006; Savage et al., 2008). Careful management of dosing for morphine or fentanyl is recommended to overpower the effect of buprenorphine blocking opioid receptors in order to achieve analgesia (Savage et al., 2008; Alford et al., 2006). Importantly, it should be
noted that if for any reason buprenorphine is discontinued the dose of opioid should be decreased because the opioid blockade effect has been removed (Alford et al., 2006). The literature review also gives the option of using buprenorphine as an analgesic. The daily dose can be divided in six to eight hours plus additional dosages of opioids to adequately treat pain (Alford et al., 2006; Savage et al., 2008).

Once pain is resolved the opioid being prescribed for acute pain will be discontinued and buprenorphine should be restarted and this process will require an induction protocol (Alford et al., 2006). A discussion on the induction protocol is outside of the scope of this paper, but the Center for Substance Abuse Treatment (2004) and Johnson, Strain, and Amass (2003) have published the protocols that can help guide the practitioner.

Treating buprenorphine-maintained patients can be challenging and a miscalculation can cause oversedation. Some of the advantages of buprenorphine versus methadone are: buprenorphine is not viewed as a “substitute high” and does not have the stigma that methadone has, is less used for diversion, has milder withdrawal symptoms, longer half life (no need to administer everyday), and lower risk of fatal overdosing (Ponizovsky & Grinshpoon, 2007). To account for this possibility of oversedation, both authors recommended to have naloxone at the bedside (Alford et al., 2006; Savage et al., 2008).

Mixing an antagonist-agonist opioid such as pentazocine, nalbuphinen, or butorphanol with methadone can cause acute withdrawal syndrome, therefore this combination should be avoided (Alford et al., 2006; Broyles & Korniewicz, 2002; Iocolano, 2000; Lindroth et al., 2003; Prater et al., 2002). Patients on maintenance methadone that have developed tolerance for opioids may require larger doses of opioids to control their pain. Also, this population has a
lower threshold for pain, and may require a shorter dosing interval for pain (Bourne, 2008; Iocolano, 2000, Mitra & Sinatra, 2004; Ziegler, 2005).

Hopper and Shaffi (2002) suggest to ask the patient details about their methadone program. For example, the name, address, telephone number and the treating physician’s name, time of enrollment in the program and the current methadone dose should be ascertained. If the patient answers vaguely that could suggest that the patient is not enrolled in a treatment program. Hence, the practitioner must verify the patient’s enrollment and actual dose must be verified with the methadone maintenance clinic and should be carefully documented in the medical record (Hopper & Shafi, 2002; Savage, 2002; Savage, 2008).

Strategies for Managing Pain in the Patient with Substance Use Disorders

Which type of medication should be prescribed for the patient with substance use disorders in acute pain?

The literature review shows evidence that most authors utilize the WHO pain ladder for the basic principles of pain management (Broyles & Korniewics, 2002, Lindroth et al., 2003; Savage et al., 2008; Prater et al., 2002). Medications to be avoided in the PWSUD and in the general population are meperidine and propoxyphene. Meperidine (Demerol) is known to be neurotoxic at high doses due to its metabolite normeperidine. Meperidine (Demerol) also has a short half-life and is highly euphoric. (Basu, 2006; Institute for Clinical System Improvement [ICSI]; Prater et al. 2002, Savage, 2008). The neurotoxic symptoms of meperidine are tremors, muscle twitches, dilated pupils, hyperactive reflexes and seizures (ICSI, 2008). Propoxyphene is known for its mild analgesic properties and its high risk of causing substance use disorder (Prater et al., 2002).
Several authors conclude that nonpharmacologic modalities such as transcutaneous nerve stimulation (TENS), imagery and behavioral therapy (Iocolano, 2002), breathing techniques, massage, relaxation techniques, hot and cold compresses in conjunction with opioids when indicated should be included in the patient’s care (Askay, 2009; ASPMN, 2002; Broyles & Korniewicz, 2002; Iocolano, 2002; Lindroth et al., 2003; Trame, 2002; Ziegler, 2005). The combination of pharmacological and non-pharmacological therapies may decrease the amount of opiates needed (ASPMN, 2002; Iocolano, 2002; Lindroth et al., 2003). More invasive procedures commonly used in the acute care setting are regional blocks and epidural blocks (Mitra & Sinatra, 2004; Savage et al., 2008; Trame, 2002) and these should be considered in the postoperative and trauma patient because they are effective analgesic strategies that do not have abuse potential.

*Intravenous route vs oral route*

According to Savage et al. (2008) we have a good understanding on how different routes of administration of opiates engage the reward system from the substance use disorder literature. This knowledge should be applied to guide the practitioner on the appropriate treatment of pain in PWSUD. When prescribing opioids practitioners must understand that the faster the level of drug reaches the brain the “better the rush or high” the patient may experience (p. 14). See Figure 1 that illustrates that the intravenous route reaches high plasma concentrations the fastest followed by the intramuscular route with the oral route being the slowest (Savage et al., 2008). The intravenous route also causes the highest level of central nervous system side effects (Savage et al., 2008). Therefore, it is recommended to use intravenous opioids right after an
acute event and, once pain management is adequate, the dose should be changed to an oral route (Prater et al., 2002; Savage et al., 2008; Trame, 2002).

**Figure 1.** Routes of opioid administration


*Around-the-clock vs pro re nata and long-acting vs short-acting opioids*

Experts recommend the administration of scheduled doses also know as around-the-clock (ATC) rather than *pro re nata* (PRN) doses when pain is present most of the time (Lindroth et al., 2003; Prater et al., 2002; Rosenblatt & Mekhail; Ziegler, 2005). The rationale behind this is that when a scheduled dose is administered, the peak blood level is maintained steadily in comparison with PRN dosages that cause fluctuation between high and low peak blood levels. There is a possibility that craving may be activated due to the fluctuation of drug blood levels in
the brain associated with PRN administration; the more stable the drug level, the less euphoria the patient experiences (Savage et al., 2008). Authors also make the argument that when a dose is prescribed, scheduling it will prevent delays in administration, decrease drug craving and decrease clock-watching behavior. This behavior can be misinterpreted as aberrant, and it gives patients a sense of control (Lindroth et al., 2003; Savage et al., 2008).

Long-acting opioids cause less of a reward feeling than intermittent short-acting formulations and experts recommend that patients who are on ATC should be changed to long acting opioids to maintain a better stable drug level (Rosenblatt & Mekhail, 2005; Savage et al., 2008). Prater et al. (2002) state that when long acting scheduled dosages are given, the addition of breakthrough pain dosages with a PRN short acting dose will maximize pain control. Even though the recommendation to treat pain in the PWSUD is to give long-acting opioids in the inpatient setting (Prater et al., 2002; Rosenblatt & Mekhail, 2005; Savage et al., 2008), the recommendation is accompanied by the risk that patient may crush the pill and snort or inject it in the outpatient setting (Trame, 2002). In the inpatient setting, long acting opioids are administered by nurses making it easier to monitor the PWSUD taking the medication and preventing its abuse. The drawback occurs when it is time to discharge the patient while he or she is still taking long-acting opioids. The problem is discussed below in greater detailed under “Discharge considerations for the patient with substance use disorders”.

There is still controversy amongst authors over the use of patient controlled analgesia (PCA). Some authors do not support the use of PCA in the postoperative period in the PWSUD (Ziegler, 2005; Iocolano, 2000). They make the argument that some patients may use the PCA to achieve a euphoric feeling (Ziegler, 2005) and this may nurture manipulative behaviors
They also discourage the use of PCA in this population if it is suspected that the patient is using the PCA for euphoric reasons or if the risk of altering the PCA pump is high (Iocolano, 2000; Ziegler, 2005). In the other hand, the authors that recommend the use of PCA in the postoperative period in the PWSUD (Askay et al., 2009; Evans & Hackman, 2005; Mitra & Sinatra, 2004; Savage et al., 2008) make the argument that PCA is not presumed to give a significant euphoric feeling because the doses administered when the patient pushes the button are generally relative small, thereby not allowing for a rapid rise and fall of drug levels (Savage, 2008). The use of PCA in the postoperative period may reduce craving since the patient receives a timely dose upon demand. The patient does not have to ask staff for pain medication, which sometimes can be misinterpreted as aberrant behavior, and it may give the patient a sense of control over their pain management (Savage, 2008). The literature review shows that PCA in the patient with tolerance may require larger bolus dosages and shorter lockout periods (Bourne, 2008; Mitra & Sinatra, 2004; Rosenblatt & Mekhail, 2005).

Figure 2 compares the opioid plasma concentration for short-acting opioids, long acting opioids and PCA. The long acting opioids and the PCA have less of an effect in the central nervous system and side effects such as euphoria because they maintain steady blood levels (Savage, 2008).
Figure 2. Schedule of opioid administration


The previously stated recommendations are based on the theory that by minimizing the activation of the reward system, the patient is less likely to develop substance use disorder, relapse or craving. Unfortunately, very few studies have “directly compared reward effects or misuse-related outcomes in persons prescribed different opioids or different formulations of a specific opioid for pain” (Savage, 2008, p. 16).

**Multimodal analgesia**

Multimodal analgesia is when multiple classes of analgesics are combined to achieve pain control (e.g. opiates and NSAIDs) (Askay et al., 2009; Mitra & Sinatra, 2004; Ziegler, 2005). Several authors recommend multimodal analgesia due to its opioid sparing properties.
(Askay et al., 2009; Bourne, 2008; Mitra & Sinatra, 2004). This involves the use of NSAIDs, actaminophen, muscle relaxants and anti-neuropathic agents (e.g. gabapentin) to reduce the amount of opioids needed to achieve adequate analgesia (Mitra & Sinatra, 2004).

The effects of depression and anxiety on pain

Pain is a physical and emotional experience and a psychiatric diagnosis of depression or anxiety can affect the emotional aspect of pain thereby enhancing the patient’s response to pain. Depression and anxiety may increase patients’s pain intensity and therefore psychiatric disorders should be treated concurrently with pain (Hopper & Shaffi, 2000; Prater et al., 2002; Ziegler, 2005). Specific recommendations on how to treat anxiety and depression concurrently with pain are outside the scope of this paper but practitioners should be aware that the interaction of pain, depression and anxiety can exacerbate the problem of adequately controlling pain.

Discharge considerations for the patient with substance use disorders

Hopper and Shafi (2000) and Iocolano (2000) summarized the available outpatient drug treatment programs for those patients who have been identified as having a substance use disorder. Some of the programs are methadone maintenance programs, drug-free outpatient programs (like NA), residential programs and long-term programs that have therapeutic communities. The patient’s opportunities to use these programs depend on the patient’s access to health care, personal motivation, and available resources in the community. Collaboration with social workers will allow the patient to choose based on availability and access to the program (Iocolano, 2000).

Upon discharge an analgesic plan should be put into place and this plan should be clear to all staff members and to the patient. Trame (2002) argues that long-acting opioids should not be
prescribed upon discharge (as mentioned above) if substance use disorder is suspected because
the medication can be crushed then snorted or injected. The United States Food and Drug
Administration have recently approved a new formulation of a long acting opioid (OxyContin)
that prevents tampering the pill, with the hopes that will minimize drug diversion (FDA, 2010).
Medication should be tapered off and the patient should be closely followed either by their PCP
or with the primary team that cared for the patient during the hospitalization. Trame (2002)
recommends weekly follow-ups with the PCP to confirm medication compliance. Upon
discharge from the emergency department patients should follow with their PCP. As discussed
above, lack of access to health care can create a system barrier that is important in this regard.

*Published recommendations from professional organizations*

Many professional organizations have developed and issued recommendations and
positions statements on the topic of pain management in the PWSUD. The core curriculum
guidelines published by the IASP, the position statement from the American Society for Pain
Management Nursing (ASPMN) and the chapter printed in the book Principles of Addiction
Medicine published by the American Society of Addiction Medicine (ASAM) are in agreement
on how to treat pain in this population. Refer to Table 8 for details on how to obtain this
information. These three organizations agree that pain management is a human right and
substance use disorder or addictive disease are not a contraindication to treat patients in moderate
or severe pain with opioids. The three organizations adopt the consensus statement on the
definition of addiction, physical dependence, tolerance, and pseudoaddiction. The strategies
covered in the literature review are consistent with the recommendations of these professional
organizations.
Gaps in Knowledge

Pain management in the PWSUD is a challenge for health care providers, and most of the knowledge that refers to this population at this time is based on expert opinion, clinical practice and a few research studies. As mentioned by Savage et al. (2008), minimizing the activation of the reward centers in the brain can reduce relapse or craving, however, very few studies have analyzed actual substance use disorder-related outcomes of people who have received opioids for the treatment of pain.

Despite the extensive use of opioid pain treatments in the acute care setting most of the studies done on risk assessment for substance use disorder are done in the population of chronic non-cancer pain patients. More research is needed to rigorously define the risks of relapse occurring in the PWSUD due to acute pain treatment with opioids who is treated in acute care or during hospitalization. However, based on the limited work described above, it is reasonable to hypothesize that such broader studies would show that these risks are actually minimal based on studies that have shown that treating acute pain with opioids actually reduces the risk for relapse in PWSUD (Paulson & Dekker, 2005; Grant et al., 2007).

A first step in minimizing the barriers that exist among health care providers can likely be achieved through education. Accessibility to published knowledge on treating acute pain in the substance abuse patient is limited. Despite extensive literature review searches, most of the relevant literature was only found after analysis of published reference lists or by reading large documents where only a small section on the topic was found. Books are available on this topic but the reader would have to pay in order to obtain the knowledge. Although, there is a new biannual journal by the National Institute of Drug Abuse called *Addiction Science and Clinical*
Practice, and the journal is in public domain, the journal is not solely on pain and substance abuse. This represents a gap in knowledge that should be addressed through the development of new literature on the topic that can be utilized in educating health care professionals on pain in the PWSUD population.

It was also noted that despite the consensus on the definitions of tolerance, addiction, substance abuse by the ASAM, APS, & ASAM, confusion on the terms is still present in the literature. The terms can be confusing to those who do not know the literature. Education to health care providers needs to be disseminated to prevent mislabeling patients that may lead to the undertreatment of pain.
CHAPTER III-CONCLUSION

Significance to the Acute Care Nurse Practitioner

Scope of practice of the ACNP

According to the National Panel for Acute Care Nurse Practitioner Competencies (NPACNP), the role of the acute care nurse practitioner (ACNP) is “to provide advanced nursing care across the continuum of health care services to meet the specialized physiologic and psychologic needs of patients with complex acute, critical and chronic health conditions” (2004, p. 13). The ACNP provides care for the acutely and critically ill patient who encounters episodic illness, an exacerbation of chronic illness, or terminal disease. Most ACNP’s practice in the acute care setting, and/or hospital based setting, such as in the emergency department, intensive care unit or inpatient unit (NPACNP, 2004). The ACNP care is focused on patient stabilization, minimization of complications, promoting well-being, and “restoring health potential while evaluating risk factors in achieving outcomes” (NPACNP, 2004, p. 13).

Significance of prescriptive authority for controlled substance

According to the American Academy of Nurse Practitioners there are currently over 125,000 practicing nurse practitioners in the US and 31% of them work in a non-primary care setting such as inpatient, emergency, surgical or a specialty practice (American Academy of Nurse Practitioners [AANP], n.d.). In the US, nurse practitioners hold prescriptive privileges in the majority of states. Nurse practitioners in 43 states have the authority to prescribe schedule II-V controlled substances and in 4 states (Ohio, Oklahoma, South Carolina, and Texas) are able to prescribed schedule III-V controlled substances. The nurse practitioner has the authority to prescribe this controlled substance either independently, in collaboration with physicians or, in
some instances, with varying limitations of length of supply and refill authority. Only in Alabama, Florida and Missouri do nurse practitioner not hold a prescriptive authority (Byrne, 2009). The ACNP who holds prescriptive privileges for controlled substances and has read this literature review will be able to optimize pain management in this population in conjunction with decreasing activation of the reward system and reducing craving potentially leading to a lower risk of relapse in the PWSUD being treated for acute pain.

The impact of the ACNP in the care of a PWSUD in the acute care setting

Inadequate pain management in the PWSUD has been identified to be a major problem in the acute care setting despite the available treatment strategies in the literature. The ACNP is in the ideal position to impact the care that PWSUD receive in the acute care setting by implementing in the care of this population the strategies highlighted in this literature review. The following treatment strategies will help the ACNP to care for this challenging population: 1) opioids are not contraindicated in the PWSUD who is in pain in the acute care setting; 2) intravenous opioids are indicated to aggressively treat the pain initially and once the pain is controlled it is recommended to switch to oral dosages -- ATC dosages are preferred rather than PRN; 3) long acting opioids are indicated in the inpatient setting -- PCA is recommended because it has less of an effect in the CNS and 4) multimodal analgesia has opioid sparing properties so this strategy should be considered in the PWSUD. Implementing these treatment strategies in the care of PWSUD not only will maximize pain management but also will decrease and prevent some of the complications that accompany the undertreatment of pain.

The ACNP who has leadership potential, is passionate about this topic and willing to change practice in the acute care setting should be involved in educating other health care
providers on how to properly treat pain in this population. The ACNP can also be involved in the
development of hospital protocols that address acute pain management in this population. By
disseminating knowledge with other practitioners and standardizing care throughout hospital
protocols more patients will benefit compared to only the patient that are under his or her direct
care for the day. The ACNP who has read this literature review will be able to advocate for the
PWSUD when other health care providers are apprehensive to treat the patients’ pain with
opioids.

Research Recommendations

Despite how much is known on the topic of acute pain control, little information is
available on how many patients who have a history of substance use disorders relapse or develop
addiction after treatment with opioids for pain. It was learned that treatment strategies that
decrease the activation of the reward system can minimize the risk of patient developing craving,
relapse and/or substance use disorders. Moreover, basic science research on the neurobiology of
reward mechanisms have greatly enhanced our understanding how substance use disorder
develops. However, these findings have largely nor been translated into clinical practice. The
writer’s recommendations are to further explore the basic science literature with the possibility to
translate some of this basic science research into the clinical setting. One example would be to
utilize drug combinations that attenuate opioid reward while preserving opioid analgesia. It is
anticipated that this strategy would have a great impact on treating pain in the PWSUD
population. In addition, to address a major gap in knowledge identified in this literature review,
conducting a study that rigorously assesses the likelihood of relapse or developing addiction in
PWSUD will help to understand how to better manage these patients in the acute care setting.
Exploring other interventions based on basic science research could direct impact the quality of life and pain management for the PWSUD. The writer’s recommendation would be to assess patients who are in the recovering phase from substance use disorders. Postoperative pain patients in the surgical and trauma setting would be a good candidate for possible recruitment, since the literature review demonstrated that these patients have a higher incidence of substance use disorders. A longitudinal study needs to be conducted that follows up patients recovering from substance use disorder to assess their rate of relapse after being treated with opioids in the inpatient setting. Since this data is not known at this time, the findings of such a study would help to better understand how to treat these patients in the future.

Gentilello et al. (1995) have demonstrated that intervention for behavior change in alcoholics is appropriate during hospitalization. The writer’s recommendations are to study PWSUD who are not alcoholics and evaluate their response to an intervention that encourages them to enroll in rehabilitation programs. The research questions will be if patients who abuse other substances would be as receptive as the alcohol abuse population and what is the percentage of patients that stop using other substances after being approached to quit during hospitalization.

The literature review demonstrated that pain management in the PWSUD to this date holds many barriers. The most common barrier mentioned in the literature is lack of knowledge among health care providers on how to treat substance use disorders and pain concurrently. The barriers can possibly be decreased with additional education on the topic. An area of further research to improve knowledge in practitioners would be to evaluate all existing guidelines that address PWSUD. Based on the assessment of all existing guidelines and knowledge from the
current literature review a standardized educational course could be developed after analyzing which are the most effective teaching strategies for clinicians. The standardized educational course would be offered to nurse practitioners, physicians, and physician assistants. Evaluation of the course content can be obtained through a quiz that is given before and after the course. As part of this standardized educational course an educational pocket guide would be given. The pocket guide will address the most appropriate interventions when treating pain in the PWSUD. A pocket guide would be beneficial to the attendees of the course since it will provide the information needed when encountering PWSUD.

Conclusion

The PWSUD has the right, just like any other patient, to receive appropriate pain management. Despite the common fear that treating pain with opioids causes addiction or relapse, opioids are not contraindicated for moderate to severe pain in this population. The literature review has demonstrated different strategies to employ when caring for the patient who is currently using substances, who is in recovery from a substance use disorder or who is on methadone or buprenorphine therapy. Some of the strategies that can be used in addition to opioid therapy are: multimodal analgesia, non pharmacological interventions, regional blocks and epidural blocks, and for the recovering patient active participation in a recovery program is recommended. Acute pain should be treated aggressively in all patient populations because it reduces the risk for developing chronic pain and because it decreases the incidence of pain related side effects such as cardiovascular and coagulation issues. In the PWSUD acute pain treatment should take into account how different opioid medications and routes of administration stimulate the reward system. The goal of such treatment should be to maintain steady pain relief
while avoiding fluctuations in reward system activation. Hence, appropriate pain management in the PWSUD in the acute care setting is possible but it takes a nuanced approach and an understanding of how acute pain should be treated and how the reward system is activated.
APPENDIX

DEFINITIONS
## Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute pain</td>
<td>Acute pain “follows injury to the body and generally disappears when the bodily injury heals. It is often, but not always, associated with objective physical signs of autonomic nervous system activity” (APS, 2008, p.1).</td>
</tr>
<tr>
<td>Addiction</td>
<td>“Addiction is a primary, chronic, neurobiological disease, with genetic, psychosocial and environmental factors influencing its development and manifestations. It is characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving” (AAPM, APS, &amp; ASAM, 2001, p. 2).</td>
</tr>
<tr>
<td>Chronic pain</td>
<td>Chronic pain, “in contrast to acute pain, rarely is accompanied by signs of sympathetic nervous system arousal. The lack of objective signs may prompt the inexperienced clinician to wrongly conclude that a patient is not in pain” (APS, 2008, p. 1).</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Prevention of craving behavior and withdrawal symptoms of opioids by long-acting opioids (e.g., methadone, buprenorphine) (Mitra &amp; Sinatra, 2004, p. 2004)</td>
</tr>
<tr>
<td>Opiophobia</td>
<td>The fear of inducing addictive disease with opioid exposure</td>
</tr>
<tr>
<td>Pseudoaddiction</td>
<td>Pseudoaddiction is a phenomenon where a patient may have behavioral changes that mimic active addiction. The behavioral changes are manifested as inadequate pain control and are resolved with adequate pain control with or without opiates (Institute for Clinical System Improvement [ICSI], 2008; Prater et al., 2002; Savage, Kirsh, Passik, 2008; Silviu, Ginosar, &amp; Davidson, 2006).</td>
</tr>
<tr>
<td>Physical Dependence</td>
<td>“Physical Dependence is a state of adaptation that is manifested by a drug class specific withdrawal syndrome that can be produced by abrupt cessation, rapid dose reduction, decreasing blood level of the drug, and/or administration of an antagonist” (AAPM, APS, &amp; ASAM, 2001, p. 2).</td>
</tr>
<tr>
<td>Recovery</td>
<td>A process of overcoming both physical and psychological dependence on a psychoactive substance with a commitment to sobriety (Mitra and Sinatra, 2004, p. 214).</td>
</tr>
<tr>
<td>Substance use</td>
<td>Use of any illegal drug such as marijuana, cocaine, heroin or inappropriate use of a controlled substance such as alcohol or prescription drugs for recreational purposes or for emotional pain (Prater, Zylstra &amp; Miller, 2002). Use of maladaptive pattern of substance abuse leading to clinically significant impairment or distress (Rosenblatt &amp; Mekhail, 2005).</td>
</tr>
<tr>
<td>Tolerance</td>
<td>“Tolerance is a state of adaptation in which exposure to a drug induces changes that result in a diminution of one or more of the drug’s effects over time” (AAPM, APS, &amp; ASAM, 2001, p. 2).</td>
</tr>
</tbody>
</table>
Table 1

*Pain Assessment and Pain Management Standards by JACHO for all Health Care Facilities*

- Acknowledge patient’s rights for pain assessment and management
- Utilize pain assessment screening tools and distinguish those patients who present with pain
- Explore the patient’s type of pain after the pain has been identified
- Document pain assessment with easily identifiable measures that allow health care providers to continue reassessing pain and follow its progress
- Provide ongoing education to health care providers on pain assessment and management
- Develop pain assessment and management competencies for staff
- Initiate pain assessment and management education to new staff during orientation
- Prevent pain from hindering patients to participate in rehabilitation
- Institute policies and procedures that reinforce relevant pain medication for the treatment of pain
- Provide education to patients and families about why pain management is essential
- Cover symptom management in discharge planning
- Track effectiveness of pain management in the health care institution

Table 2

World Health Organization Pain Ladder Steps

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>± Non-opioid, ± adjunctant, e.i. paracetamol, aspirin, nonsteroidal anti-inflammatory drugs</td>
</tr>
</tbody>
</table>

If pain is persists or increases go to Step 2

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Opioid for mild to moderate pain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>± non-opioid, ± adjunctant (e.i. codeine, tramadol, etc.)</td>
</tr>
</tbody>
</table>

If pain persists or increases go to Step 3

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Opioid for moderate to severe pain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>± non-opioid, ± adjunctant (e.i. morphine, fentanyl, etc.)</td>
</tr>
</tbody>
</table>

Table 3

*Common Substances of Use with Corresponding Withdrawal Syndromes*

<table>
<thead>
<tr>
<th>Substance</th>
<th>Examples with Route of Administration</th>
<th>Withdrawal Symptoms</th>
<th>Life-threatening Withdrawal?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opiates</strong></td>
<td>Heroin—intravenous, intranasal, subcutaneous injection, occasionally smoked Morphine—intravenous, oral Methadone, oxycodone, Tylenol #3, MS contin—orally, but also sometimes crushed, diluted and then injected</td>
<td>Nausea, vomiting, diarrhea, myalgias (back, legs), chills and diaphoresis, dysphoria and irritability, rhinorrhea and lacrimation, papillary dilation, piloerection (“gooseflesh”), drug cravings, mild tachycardia and/or hypertension</td>
<td>No</td>
</tr>
<tr>
<td><strong>Benzodiazepines (BZ) and barbiturates (BRB)</strong></td>
<td>BZ—alprazolam (Xanax), lorazepam (Ativan), diazepam (Valium), Clonazepam (Klonopin)—Oral</td>
<td>Tachycardia and hypertension, diaphoresis, agitation and confusion, tremulousness and/or seizures, anxiety and irritability, auditory and visual hallucinations</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Alcohol</strong></td>
<td>Beer, wine, whiskey, spirits—oral</td>
<td>Same as BZ and BRB Note: withdrawal seizures may occur independently of delirium tremens (DTs)</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Stimulants</strong></td>
<td>Cocaine—intravenous, intranasal, subcutaneous injection, smoked “Crack” (cocaine)—smoked</td>
<td>Depression, fatigue and hypersomnia, paranoia, agitation and anxiety, hyperreflexia, resting tachycardia</td>
<td>No</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>Hallucinogens—PCP, LSD—smoked/orally Inhalants—glue, household solvents—intranasal “Club drugs”—XTC, GHB, ketamine—orally</td>
<td>Varies</td>
<td>No</td>
</tr>
</tbody>
</table>
Table 4

*Common Physical and Laboratory Findings Associated with Addicted disorders*

<table>
<thead>
<tr>
<th>Suggestive physical signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatic Enlargement</td>
</tr>
<tr>
<td>Intravenous injection scars “tracks” (commonly anticubital fosae, dorsum of hand/feet)</td>
</tr>
<tr>
<td>Alcohol withdrawal signs (flushing, hyperreflexia, elevated blood pressure and pulse)</td>
</tr>
<tr>
<td>Opioid withdrawal signs (mydriasis, sweating, irritability, rhinorrhea)</td>
</tr>
<tr>
<td>Intoxication, nodding (alcohol or drugs)</td>
</tr>
<tr>
<td>Constricted pupils (opioids)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suggestive laboratory findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive uring blood, or breathalyzer screens</td>
</tr>
<tr>
<td>Positive HIV (intravenous drug use)</td>
</tr>
<tr>
<td>Positive HepBAg or AntiHepBAg (intravenous drug use)</td>
</tr>
<tr>
<td>Positive HepcAg or AntiHep Cag (intravenous drug use)</td>
</tr>
<tr>
<td>Elevated GGT (alcohol)</td>
</tr>
<tr>
<td>Elevated MCV (alcohol)</td>
</tr>
</tbody>
</table>

Table 5

*Maladaptive Behaviors Suggestive of Active Addiction*

<table>
<thead>
<tr>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling drugs</td>
</tr>
<tr>
<td>Prescription Forgery</td>
</tr>
<tr>
<td>Stealing or borrowing drugs from others</td>
</tr>
<tr>
<td>Requesting specific drugs</td>
</tr>
<tr>
<td>Drug hoarding during periods of reduced symptoms</td>
</tr>
<tr>
<td>Losing medications</td>
</tr>
<tr>
<td>Patient looking for pain medication at first visit to a new physician</td>
</tr>
<tr>
<td>Using multiple physicians to obtain medications</td>
</tr>
<tr>
<td>Obtaining prescription drugs from nonmedical sources</td>
</tr>
<tr>
<td>Using multiple pharmacies</td>
</tr>
<tr>
<td>Seeking medication for new sources of pain or unapproved use of the drug to treat other symptoms</td>
</tr>
<tr>
<td>Unsanctioned dose escalation</td>
</tr>
<tr>
<td>Continued dosing in spite of significant side effects or consequences that are due to the drug and not to the pain or the condition causing the pain (eg, alienation of friends and/or family, inability to work)</td>
</tr>
<tr>
<td>Injecting oral medications</td>
</tr>
<tr>
<td>Unapproved use of other psychotropic drugs during opioid therapy</td>
</tr>
<tr>
<td>Concurrent abuse of alcohol</td>
</tr>
</tbody>
</table>
Unwillingness to comply with full treatment plan (eg, utilization of nonopioid pain management techniques)

Evidence of use of illegal drugs (cocaine, marijuana, heroin)

Overwhelming concerns about the continued availability of the opioid being used

Risk-taking behavior while using psychotropic medications

Frequent signs of intoxications: significant impairment of physical, mental, or social skills

Table 6

Patient-controlled Analgesia (PCA) for Acute Pain

Goals of treatment

1. To achieve my pain rating and activity goals: _______________________
   Example: 2/10 to turn, cough, and deep breath.

2. To relieve my pain without causing sedation

3. To keep me from experiencing withdrawal symptoms

4. Other: __________________________________________________________________

Patient and staff responsibilities:

1. I will use the pain rating scale to report pain to the staff

2. The staff will accept and respect my reports of pain as the best indicator of how much
   pain I have

3. The staff will be responsible for providing as much as analgesia as necessary to relieve
   my pain, unless it would endanger my health

4. I will not tamper in any way with the PCA pump

5. I will not take any unordered medication

6. I will not allow visitors to bring illicit drugs or alcohol into the hospital setting

7. The staff will gradually taper the infusion before it is stopped. They will consider my
   pain ratings and my progress toward recovery to determine when and by how much to
   reduce doses and to provide other means of pain relief, if necessary

We mutually agree to the above
Signature of patient
Date: __________

Signature of clinician
Date: __________

Note. From “Patient contracts: a perspective on contracts/written agreements relative to
prescribing opioid analgesia,” by M. McCaffery, n.d. Retrieved on April, 12, 2010 from
Center. Reprinted with permission.
Preoperatively

- Determine the patient’s status in the recovery process
- Encourage the patient to intensify involvement in recovery program
- Include the patient’s sponsor or trusted member in the pretreatment interview
- Involve the patient in the decision process of medication choices, dosing, and scheduling
- Reassure the patient that alcoholism will not deter adequate treatment of anxiety and pain
- Discuss the risk of relapse when using mood-altering medications
- Consult with the patient’s primary care physician or addictionologist, if possible
- Prescribe NSAIDs 1 hour before the procedure for preemptive analgesia

Intraoperatively

- Encourage nonpharmacologic relaxation techniques for stress and anxiety control
- Consider oral anxiolytics or N20/02 sedation only after discussion of potential risks with the patient
- Obtain profound local anesthesia
- Use long-acting local anesthesia at the termination of the appointment

Postoperatively

- Use opioid/nonopioid compounds to treat moderate to severe pain in patients with addictive disorders
- Prescribe analgesic administration on a clock-regulated basis and not on a PRN basis
Avoid unsupervised control of potentially intoxicating medication; have the trusted other
dispense these medications

Table 8

Professional Organizations Recommendation

<table>
<thead>
<tr>
<th>Name of Professional organization</th>
<th>Type of document</th>
<th>Reference</th>
</tr>
</thead>
</table>
Reference


