Substance Abuse and Addiction

Implications for pain management in patients with cancer

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BACKGROUND: Substance use disorders (SUDs) are chronic diseases that may complicate the nursing care of patients with cancer, affecting their ability to adhere to treatment protocols, responses to cancer pain, and use of opioids for analgesia.

OBJECTIVES: This article explores how the presence of an SUD may affect oncology nursing care and pain management.

METHODS: The PubMed and CINAHL® databases were searched for articles from 1980–2016 using the keywords cancer, cancer pain, addiction, substance abuse, and alcoholism.

FINDINGS: SUD is a common comorbidity in patients with cancer that may play a role in disease etiology. Practice guidelines are suggested for the assessment and management of addiction to improve overall outcomes for patients. Effective treatments for SUDs and cancer pain exist, and recovery can lead to improvements in multiple aspects of patients’ lives.

KEYWORDS
pain; substance use disorder; opioids; abuse; addiction

DIGITAL OBJECT IDENTIFIER
10.1188/17.CJON.203-209

Drug and alcohol use are common behaviors in the United States and, consequently, are often encountered in oncology nursing practice. According to the National Survey on Drug Use and Health, in 2014, 53% of all Americans aged 12 years or older reported having had at least one alcoholic drink in the past 30 days, and 23% had engaged in binge drinking (drinking five or more drinks on one occasion) at least once during the same time frame (Substance Abuse and Mental Health Services Administration [SAMHSA], 2015). This national survey, which randomly samples the U.S. civilian, noninstitutionalized population aged 12 years or older, collects data on illicit drug use as well. Although less common, an estimated 10% of Americans aged 12 years or older reported using an illicit drug in the month prior to the survey, with marijuana being by far the most commonly used illicit drug in the United States (used by 8% of the population). Following in prevalence is the nonmedical use of prescription drugs (i.e., analgesics, stimulants, or sedatives) by 2.4% of the population, with more than half (58%) of this group specifically reporting nonmedical use of prescription opioids (SAMHSA, 2015).

The majority of those who consume alcohol or drugs do so within a functional social context and never develop problematic use patterns. However, with repeated use, some people will develop a substance use disorder (SUD), defined as a chronic, treatable, neuropsychiatric disease that brings consequences in all life domains (e.g., social, psychological, health, legal, employment) (De Maeyer, Vanderplasschen, & Broekaert, 2010; Levola, Aalto, Holopainen, Cieza, & Pitkänen, 2014). As such, SUDs can have a significant impact on patient responses to cancer therapy, particularly in the provision of pain care. The bulk of the literature refers to alcohol and opioid use disorders and will be most often referred to in this article.

Substance Use Disorders

About 9% of Americans meet the diagnostic criteria for an SUD (6% for alcohol and 3% for illicit drugs), making it one of the most common chronic diseases in the United States (SAMHSA, 2015). The health consequences of an SUD (including organ damage, infections, motor vehicle accidents, and mental illness) are mirrored by social effects of the disease, such as crime, violence (including domestic violence and child abuse), incarceration, and...
homicide. SUDs are estimated to cost Americans more than $400 billion annually: $224 billion for alcohol ($25 billion in health care) (Centers for Disease Control and Prevention, 2014) and $193 billion for illicit drugs ($11 billion in health care) (U.S. Department of Justice, 2011). These numbers do not fully describe the consequences of the disease in regard to the suffering experienced by patients with SUDs and their families.

Diagnosis
An SUD is diagnosed by the presence of certain physiologic and behavioral signs and symptoms occurring during a given period. The Diagnostic and Statistical Manual of Mental Disorders (DSM-V) defines substance abuse and addiction as psychiatric illnesses with specific indicators (diagnostic criteria) that exist on a continuum of severity (American Psychiatric Association, 2013). Although each substance (e.g., alcohol, marijuana, heroin) is addressed as a separate use disorder, all share the same overarching SUD criteria. Notably, most of the criteria are behavioral in nature and reflect a general inability to control use of the substance—the consequences of which are reflected across multiple life domains (e.g., work, school, home, social and recreational activities). In addition, use continues despite significant consequences with respect to family relationships, financial status, and health. Patients experience a strong desire to use (or craving), and life activities are generally reduced to drug-seeking, drug-using, and recovering from the effects of use. Unfortunately, many nonclinical terms are used by the lay public and media without precise and shared meanings, such as addiction, physical dependence, substance abuse, alcoholism, and chemical dependency. Descriptions of and distinctions between these terms are provided in Figure 1. Notable within this list is a blurring of physiologic and behavioral definitions of the disorder, as well as where and how they are used. Figure 2 consists of a questionnaire used to determine patient opioid misuse.

Classification as a Chronic Disease
An SUD is a chronic disease, characterized by remissions (recovery) and exacerbations (active drinking or using), which can be well managed with treatment but never cured. As with other chronic diseases, the expression of an SUD is different in each person, and treatment approaches expand beyond pharmacotherapy to include cognitive-behavioral therapy, complementary integrative therapy, counseling, family therapy, group support, and lifestyle changes (Miller, Forcehimes, Zweben, & McLellan, 2011).

Not unlike Alzheimer disease and depression, an SUD is a disease of the brain. All drugs of abuse, including alcohol and nicotine, stimulate two key pathways in the brain, which underlie their addictive properties. Abused drugs and alcohol activate the mesolimbic pathway, a dopaminergic track often referred to as the “reward pathway,” in the subcortex, providing reinforcing or pleasurable feelings. This highly rewarding experience consolidates very strong memories that drive subsequent behaviors to repeat the rewarding experience. Over time, these become the predominant behavior patterns of the diseased individual, meeting the diagnostic criteria of an SUD (Brick & Erickson, 2012).

Commonly, patients with an SUD concurrently experience another psychiatric illness or disorder. In 2014, of the 20.3 million Americans with an SUD, almost 40% had a mental, behavioral, or emotional disorder in the past year that met DSM-V criteria, with about 11% of that percentage meeting criteria for a serious mental illness (SAMHSA, 2015). Conversely, 18% of people with a mental illness also meet diagnostic criteria for an SUD, a rate that increases to 23% in adults with serious mental illness (SAMHSA, 2015). Caring for a patient with an SUD often involves treating concurrent psychiatric illness as well.

A family history of substance abuse, whether for alcohol or illicit drugs, is a significant predictor of SUDs in all clinical populations. Surveys of adoptees and twins reared apart from their family of origin have revealed that heredity is a slightly stronger predictor of alcoholism than environment (Kimura & Higuchi, 2011). However, the importance of the family environment in predicting adult SUDs cannot be minimized. First exposure to a drug that may be only mildly rewarding in a neutral or comfortable environment may become much more rewarding in the context of significant or chronic stress, conditions that are likely to be present in families experiencing alcoholism or addiction (Rüütel et al., 2014).

Similar to diabetes or COPD, an SUD is a disease that will become worse over time and is, if untreated, ultimately fatal. Relapse is a relatively common occurrence, particularly within the first 90 days of becoming abstinent or during times of stress (Bossert, Marchant, Calu, & Shaham, 2013; Everitt, 2014; Shalev, Erb, & Shaham, 2010). Too often considered a failure of SUD treatment, relapse is an exacerbation of a chronic disease or a disease state not under good control. Reframing the relapse as a learning opportunity, as opposed to a treatment failure, is predictive of better long-term outcomes (Miller et al., 2011).

Stress is a primary precipitator of relapse (Haas-Koffler & Bartlett, 2012; Schank, Ryabinin, Giardino, Ciccocioppo, & Heilig, 2012). A cancer diagnosis and concomitant health and lifestyle changes can be quite distressing for patients. For patients with
an SUD, their repertoire of adaptive coping responses to stress is narrow, with drug use eventually becoming their primary coping mechanism. Unless they have developed alternate coping strategies, supports, pharmacologic adjuncts, resources, or skills, the use of drugs and alcohol is likely to resume under stressful conditions.

Substance Use Disorders in Patients With Cancer
The prevalence of SUDs in patients with cancer is not known. Early studies reported low rates (5%) of SUDs in patients with cancer (Ballantyne, 2007; Derogatis et al., 1983; Passik, Portenoy, & Ricketts, 1998), whereas more recent examinations of Medicare data have found the prevalence of SUDs in men with advanced prostate cancer to be closer to 11% (Chhatre, Metzger, Malkowicz, Woody, & Jayadevappu, 2014). Increased rates of cancer in patients with alcohol use disorder are suspected because of the known injurious effects of abused substances on cells and body tissues. Inflammatory or other repair responses to cellular injury can result in DNA mutations that play a role in inducing neoplastic changes. A chart review of 598 patients with advanced cancers found that 17% were positive for alcoholism on the CAGE (Cut down, Annoyed, Guilty, and Eye-opener) Substance Abuse Screening Tool, but just 13% had been identified as alcoholic before their palliative care consultation (Dev et al., 2011). Those who had screened positive for alcoholism with the CAGE tool were also more likely to be taking potent opioids at the time of referral than patients who screened negative for an SUD. Although not formally diagnosed with an SUD, 39%–43% of patients with cancer on opioids were screened as being at medium to high risk for opioid abuse on standard opioid abuse screening tools (Angelescu, Ehrentraut, & Faughnan, 2013; Barclay, Owens, & Blackhall, 2014). Ballantyne (2007) reported the prevalence of opioid use disorder in patients with cancer to be about 8%.

Assessment
Several valid and reliable SUD screening tools are available for clinical use (www.integration.samhsa.gov/clinical-practice/screening-tools#drugs). Some are generic and used to screen for many types of substance use, whereas others are used to screen for the abuse of specific substances (e.g., alcohol, opioids). Two of the most commonly used screening tools for opioid misuse in patients receiving opioid analgesic therapy, the Screener and Opioid Assessment for Patients in Pain and the Current Opioid Misuse Measure, are available online (www.painedu.org/soap.asp). If a patient is screened and determined to be at risk, expanding the treatment plan to monitor for and address evidence of abuse is necessary.

Patient History
Adopting a matter-of-fact approach when taking a patient’s substance use history is important. Current use, including the last episode, should be discussed and signs of intoxication or withdrawal noted. Questions about family history of alcoholism and addiction, as well as about problems indicative of an SUD in legal, employment, and social domains, should be asked. In addition, psychiatric history, including prior treatment for addiction, depression, anxiety, and suicide attempts, is important to obtain.
Identifying patients with an SUD who are either in denial or who do not want to disclose their use of substances to healthcare personnel can be challenging. Vague or inconsistent responses to specific questions about substance abuse should be explored. In addition to family history of SUDs and psychiatric history, red flags include first use at an early age (younger than 15 years), trauma in higher frequency than expected, single-vehicle accidents, seizures with onset at age 10–30 years, and sexual abuse as a child.

For patients who are in remission (recovery), nurses should determine for how long and under what circumstances they have been drug and alcohol free. The primary substance of abuse should be noted, as well as any current relationship with a support/recovery group and/or therapist. Patients’ concerns about exposure to pain medications with abuse liability (e.g., opioids, marijuana) over the course of treatment should be explored. If patients are taking methadone (Dolophine®) or buprenorphine (Suboxone®) for the treatment of opioid addiction, nurses should, with patient permission, initiate contact with the provider to ensure continuity of care. Patients should be assured that pharmacologic therapy for the SUD will continue throughout cancer treatment and will not interfere with the provision of adequate analgesia as needed.

Objective Signs
Until significant tissue or organ damage is present, objective signs of an SUD may be difficult to detect or be relatively nonspecific. Urine drug screens can be helpful. In the case of alcohol abuse, increased levels of mean corpuscular volume, gamma-glutamyl transferase, and carbohydrate-deficient transferrin in the plasma can reflect alcohol’s direct toxic effects on red blood cells, hepatocytes, and hepatic protein synthesis, respectively. Generalized immunosuppression is reported in abusers of substances of all types (Roy et al., 2011; Tashkin, Baldwin, Sarafian, Dubinett, & Roth, 2002); however, this is likely attributable to the drug-abusing lifestyle instead of the effects of the drugs themselves. These indicators provide evidence only of use, not of an SUD (Helander, Péter, & Zheng, 2012).

Management of Substance Use Disorders in Patients With Cancer
Just as diabetes must be well managed during cancer treatment, so must an SUD. Although the treatment of SUDs is beyond the scope of oncology nursing practice, the ongoing nature of the relationship between nurse and patient provides an ideal setting in which to support recovery efforts. Many oncology groups and clinics have psychiatrist and psychologist affiliates to whom referrals can be made; in other settings, referrals are made to community mental health centers or clinics. Self-help 12-step programs are readily available and can be recommended to all patients (Miller et al., 2011). For optimal cancer outcomes, as well as meaningful end-of-life experiences, well-treated addiction and pain may improve familial relationships, functionality, and psychological states.

Compliance With Cancer Treatment
Living with cancer and undergoing cancer treatment require many new behavioral changes that patients must integrate into daily life. For example, patients are strongly recommended to get adequate amounts of exercise and rest, as well as to improve their nutrition and increase their fluid intake. In addition, patients with cancer must add new medications to daily regimens and attend multiple appointments with many specialists. Because the behavioral repertoire of patients with SUDs can be relatively narrow, they may not be able to integrate new treatment-related behaviors into their substance-using lifestyle. They may not take medications as prescribed and may miss appointments. Drug and alcohol use may continue at the expense of adequate nutritional intake and restful sleep. An ongoing SUD precludes optimal adherance to the cancer treatment plans, which, ultimately, results in poorer outcomes.

Pain Management
Pain management for patients with SUDs is particularly challenging in that the class of medication often used to treat cancer pain, opioids, has an abuse liability. Evidence supports that the presence of an SUD worsens the pain experience for patients, causing a syndrome of pain facilitation, in which discomfort is augmented by subtle withdrawal syndromes, intoxication- or withdrawal-related sympathetic arousal or muscular tension, sleep disturbances, affective changes, or functional changes (Savage, Kirsh, & Passik, 2008). Experimental data support decreased pain tolerance in patients currently using opioids or cocaine as compared to those in recovery and matched normal controls (Compton, 1994).

Opioid abusers appear to have specific changes to their pain responses. A theorized neuroadaptation to opioid use is the phenomenon of opioid-induced hyperalgesia (OIH). Ongoing opioid use results in increased sensitivity to experimental pain, which has the potential to interfere with desired pain relief outcomes; this has been well demonstrated in animal studies and inferred in patients with opioid use disorder (Compton, Charuvastra, Kintaudi, & Ling, 2000; Compton, Charuvastra, & Ling, 2001). The presence of and implications for OIH in patients with pain (whether nonmalignant or cancerous pain) has not been empirically described.

With regard to providing opioid analgesics to patients with cancer and with a history of SUDs, many principles are the same as with other patients (Cheattle, Comer, Wunsch, Skoufalo, & Reddy, 2014; Chou et al., 2009). Clinicians are encouraged to choose long-acting opioids with gradual onset of action, administered around the clock. In the inpatient setting, patient-controlled analgesia not only decreases total opioid requirements, but also may decrease drug-seeking behaviors as well (Mehta & Langford, 2008).
If opioids will be self-administered, the treatment plan should be broadened to involve an opioid treatment agreement that enables careful monitoring of opiate use, such as the inclusion of a single provider, urine toxicology screens, and methods of obtaining rescue doses. Analgesic use and response should be documented carefully at each encounter. When possible, an interdisciplinary team approach, consisting of oncology and addiction medicine expertise, is highly recommended (Passik & Theobald, 2000).

Actively Using
For patients with active addiction, building trust and a therapeutic relationship is critical. Oncology nurses are encouraged to openly acknowledge patients’ use of drugs and/or alcohol and allow them to discuss their fears about how this may affect pain management and treatment by staff. Nurses should respect and believe patients’ reports of pain, keeping in mind that individuals with active SUDs are likely to be less tolerant of pain than nonaddicted patients. In addition, nurses should aggressively treat reports of pain, as well as remember that provision of adequate analgesia in this population carries the additional benefit of averting relapse and making patients more likely to consider SUD treatment interventions. For patients physically dependent on opioids, alcohol, or sedative hypnotics, providing long-acting substitute medications to prevent withdrawal is imperative. Opioid withdrawal in particular is associated with increased pain sensitivity.

**FIGURE 2.**
PRESCRIPTION DRUG USE QUESTIONNAIRE–PATIENT VERSION

**QUESTIONNAIRE INSTRUCTIONS**
Please answer all of the following questions.

**SCORING INSTRUCTIONS**
Each affirmative response receives a score of 1 (except for item 1, which is not counted, and item 6, which is reverse-scored). Sum for the total score. A score of 10 or greater indicates opioid misuse.

1. Do you have more than one painful condition?
2. Are you disabled by pain (unable to work or participate fully in activities)?
3. Are you receiving any disability payments (such as Supplemental Security Income or Veterans Affairs disability)?
4. Do you have any current lawsuits or claims related to your pain problem?
5. Have you tried any nonmedication treatments for your pain problem (such as physical therapy, transcutaneous electrical nerve stimulation, biofeedback)?
6. Has your pain been adequately treated over the past six months?
7. Do you feel at all angry or mistrustful toward your previous doctors?
8. Have you been given pain medications from more than one clinic over the past six months?
9. Have you ever been or do you think you might currently be addicted to pain medications?
10. Has a doctor ever told you that you were addicted to pain medications?
11. Have you had to increase the amount of pain medications you take over the past six months?
12. Have you had to call in for more pain medications because your prescription ran out?
13. Have you used the pain medications to help other symptoms, such as problems sleeping, anxiety, or depression?
14. Do you save up unused medications in case you might need them in the future?
15. Do you ever use alcohol to help relieve some of the pain?
16. Do you think certain pain medications (such as acetaminophen)/hydrocodone [Vicodin®], codeine, or acetaminophen/oxycodeone [ Percocet®] work better for you and you prefer to take them and not others?
17. Have you ever lost your pain medications and needed them replaced?
18. Have you had to visit the emergency department in the past six months because of your pain problem?
19. Have you ever used an alcohol or drug abuse problem?
20. Have doctors ever refused to give you the pain medications you felt you needed because of fear that you might abuse them?
21. Is anyone in your family or among your friends concerned that you might be addicted to pain medications?
22. Do any of your family members disagree with your use of pain medications?
23. Does anyone in your family help to take care of you because of your pain problem?
24. Does your spouse or significant other have problems with drugs or alcohol?
25. Have those in your family or among your friends ever obtained pain medications for you?
26. Have you ever borrowed pain medications from a friend or family member?
27. Has anyone in your immediate family (father, mother, siblings) ever had a problem with drugs or alcohol?
28. Has anyone in your immediate family (father, mother, siblings) ever had a problem with chronic pain?
29. Have you ever had an alcohol or drug addiction problem?
30. Have you ever been treated for an alcohol or drug abuse problem?
31. Have you ever been taken partially or completely off pain medications to decrease your tolerance?

In Recovery
For patients in recovery from an SUD, nurses should openly acknowledge their history of addiction and allow them and their family members to share their fears of relapse. Nurses should discuss any plan to use opioids, marijuana, or other psychoactive medications, as well as respect the right to decide whether to take them. Nurses can also reassure patients that, if they decide against opioid analgesia now, they can always opt for this treatment in the future.

Patients who are in medication-assisted recovery (methadone or buprenorphine) should take their maintenance dose as prescribed and be provided with opioids for pain control as for any other patient, titrating to effect. Although patients will have some degree of pharmacokinetic and functional tolerance, the maintenance agent provides little, if any, pain relief. Patients with an SUD typically need analgesic doses slightly higher than nonaddicted patients, in addition to their daily methadone or buprenorphine dose, to manage pain (Alford, Compton, & Samet, 2006).

During this stressful time, the treatment plan should broaden to support patients’ recovery efforts and include their recovery program or sponsor in care when possible. Stress relief interventions are also important. An addiction medicine specialist and the use of support groups (12-step or otherwise) can reinforce patients’ recovery. Nurses should keep in mind that an exacerbation may occur during this stressful time period, and that the goal is to minimize the extent of the lapse and help patients return to recovery.

Implications for Practice
Changes in practice cannot happen without improving the preparation of healthcare professionals to assess for and support well-managed SUDs. Prescribing opioids to people with SUDs remains associated with punitive moral, legal, and social views of addiction. Although perhaps less salient in the context of end-of-life analgesia, such attributions persist and affect prescribing patterns. Although oncology clinicians often encounter patients with SUDs, they have little training and are poorly prepared to manage this disorder in their patient population. A survey of palliative care clinicians’ educational preparation and perceived competence (Childers & Arnold, 2013) revealed that of 102 respondents, 39% had less than four hours of training in substance abuse during their residency, and 53% reported the same during their fellowship. Another 5% reported no training in managing SUDs across their training programs. These clinicians also reported low levels of competence in caring for patients with a high risk of addiction, and only 21% were satisfied with their skills in treating pain and symptoms in patients with cancer with SUDs. These findings suggest an urgent need to provide more education to clinicians in this area.

Conclusion
Addiction is a chronic, relapsing disease that affects as much as 10% of the general population and a somewhat higher rate of patients with cancer. The effects of addiction complicate the course of cancer treatment in multiple ways, specifically with patients’ ability to comply with prescribed regimens and achieve good pain control. With an understanding that pain and SUD systems are interrelated, oncology nurses can provide effective and appropriate pain management to individuals with SUDs to provide relief and support recovery.

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The authors take full responsibility for this content. Compton has previously received honoraria from Mallinckrodt Pharmaceuticals and has received support from Pacira Pharmaceuticals, Inc., for services on speakers bureaus and for participation in advisory or review activities. The article has been reviewed by independent peer reviewers to ensure that it is objective and free from bias. Mention of specific products and opinions related to those products do not indicate or imply endorsement by the Oncology Nursing Society.

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