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# Managing Opioid Use in Orthopaedic Patients Through Harm Reduction Strategies

Julie Worley

Opioids are commonly prescribed in orthopaedics for acute or chronic pain for a variety of conditions, including injury, trauma, degenerative processes, and postsurgical. Patients who are taking opioids because of a substance use disorder (SUD) are also seen in orthopaedics. Patients who are prescribed opioids are at risk of developing an opioid use disorder (OUD). Ten percent of Americans will develop an SUD, which is considered a chronic medical condition that develops due to an imbalance in brain chemistry. In studies, orthopaedic surgeons have a high rate of prescribing opioids, but this rate is decreasing along with national average due to public and provider awareness of the opioid epidemic and professional recommendations. Despite the evidence of a neurobiological cause for SUDs, stigma toward patients with SUDs and a knowledge deficit are common among healthcare professionals, including orthopaedic nurses. A harm reduction approach when working with orthopaedic patients taking opioids either prescribed or used because of an OUD can be applied to reduce the problematic effects of opioids. Harm reduction strategies are supportive to the patient and include education and prevention, adopting evidence-based treatment and communication strategies, and the use of naloxone to prevent opioid overdose.

Pain management is an important aspect of care in orthopaedics, particularly after injury, trauma, or surgery, when pain is expected because of tissue damage. Traditionally, opioid prescribing in orthopaedics has been higher than average. In the latest comprehensive study of opioid prescribing by specialists, orthopaedic surgeons were the third highest prescribers in the United States (Volkow, McLellan, Cotto, Karithanom, & Weiss, 2011). In another study of prescribing practices for noncancer pain for Medicaid recipients, among specialists, orthopaedists were the most likely to prescribe opioids (Ringwalt et al., 2014). Despite high rates of opioid prescribing in orthopaedics, evidence indicates that this is not resulting in improved pain outcomes. In a systematic review of literature, researchers found that orthopaedic patients who consumed more opioids prescribed after extremity trauma communicate greater pain intensity and less satisfaction with pain control (Koehler, Okoroafor, & Cannada, 2018). Furthermore, there is insufficient evidence for the long-term benefits of long-term opioid therapy and that opioid use for longer than 12 weeks has only a moderate effect for pain relief with small benefits and functional outcomes (Centers for Disease Control and Prevention [CDC], 2016).

With increased awareness of the opioid epidemic and new guideline by the CDC on opioid prescribing, the number of prescriptions being written has started to decrease (CDC, 2016). There was a 13% overall decrease in the opioid prescribing rate in the United States from 2012 to 2015 (Guy et al., 2017). One of the nation's largest insurers, Blue Cross Blue Shield (2018) identified a 29% reduction in opioid prescriptions since 2013. This reduction in opioid prescribing has also been noted in orthopaedics. An analysis of 800 orthopaedic surgeons who provided care for 370,000 patients showed that there was a 13.4% decrease in opioid prescribing from 2014 to 2017 (Pole, 2017). The purpose of this article is to discuss issues and strategies for opioid prescribing in orthopaedics that include strategies that are supportive to the patient and include education and prevention, adopting evidence-based treatment and communication strategies, and the use of naloxone to prevent opioid overdose.

## Opioid Use Disorder

A risk of prescribing opioids is that the patient may misuse or use an opioid prescription nonmedically, which can lead to the development of a substance use disorder (SUD), particularly an opioid use disorder (OUD). Approximately 2.1 million Americans or 20% of Americans 12 years and older have used a prescription drug nonmedically (National Institute on Drug Abuse [NIDA], 2018c). Twenty-three million adults have struggled with an SUD, and statistically, 10% of Americans will have an SUD in their lifetime (National Institutes of

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Health [NIH], 2015). Availability of an opioid, which would be the case when it is prescribed, can put someone at risk of developing an SUD along with other risk factors, including a genetic predisposition that can be as great at 50%, early age of first use, a highly stressful living environment, experiencing trauma, and having another mental health disorder (NIDA, 2018c; Volkow, Koob, & McLellan, 2016).

Substance use disorders are considered to be a brain disease due to a disruption in the balance of neurotransmitters that negatively impacts the brain function. Repeated substance use results in an elevation of dopamine levels in the prefrontal cortex and the anterior cingulate gyrus of the brain that leads to a downregulation of natural dopamine and resultant low dopamine levels, which causes negative affect, poor decision-making, and impulse control (Volkow et al., 2016). Substance use disorders are chronic health disorders with exacerbation rates of 40%–60%, which are similar to exacerbation rates of other chronic health disorders such as diabetes, asthma, and hypertension (NIDA, 2014). Despite the evidence of a neurobiological cause for SUDs, stigma from healthcare professionals exists and is associated with poor engagement, decreased empathy, and suboptimal care for people with SUDs (Bartlett, Brown, Shattell, Wright, & Lewallen, 2013; Brener, Hippel, Kippax, & Preacher, 2010; Van Boekel, Brouwers, Van Weeghel, & Garretsen, 2013). Knowledge deficits about providing care for patients with SUDs are also common, including in orthopaedics. In one study that included orthopaedic nurses, 88% of nurses did not have sufficient knowledge about treating pain in patients with OUD (Krokmyrdal & Andenæs, 2015).

In addition to patients who use opioids in orthopaedics prescribed because of their medical need for pain management, patients with existing OUD will be examined due to injuries or other conditions. Injuries requiring orthopaedic care occur in patients with SUDs at a higher rate due to impaired judgment and coordination while under the influence (NIH, 2017). This presents a challenge in the orthopaedic setting when a patient has an OUD and needs additional medication for pain management or who may exhibit withdrawal symptoms during his or her care. Strategies that can be useful for managing opioid use in orthopaedic patients include those based on the principle of harm reduction that focuses on preventing or reducing problematic effects.

## Harm Reduction Strategies

Harm reduction is a concept developed by Marlatt (1996) initially described as a "come-as-you-are" approach where patients are met at the place they are at in their use or recovery with an effort to work with them to prevent or reduce the problematic effects of substance use (Worley, 2017). Harm reduction strategies can be useful when managing opioid use in orthopaedic patients whether prescribed or in the course of an OUD. The harm reduction model applied to the SUD epidemic is a model that is characterized by the following principles: (a) It is a public health alternative to other models of SUDs such as moral, criminal, and disease models; (b) it not only recognizes abstinence as an ideal outcome but also accepts alternatives that reduce harm; (c) it has emerged as a bottom-up approach based on people with SUDs, rather than a top-down approach by professionals in the field of SUDs; and (d) it promotes low-threshold rather than high-threshold access to SUD services (Marlatt, 1996; Worley, 2017). With a harm reduction approach, steps taken in the right direction are valued and accepted, total abstinence or cessation of use is not automatically expected or demanded, and motivational interviewing (MI) is utilized, which is a nonjudgmental communication approach that focuses on the client's determination to change (Logan & Marlatt, 2010). Other components of harm reduction include an emphasis on prevention. In one review, researchers found that harm reduction strategies improve quality of life and are cost-effective (Wilson, Donald, Shattock, Wilson, & Fraser-Hurt, 2015).

When making decisions about pain management, and managing opioid use in orthopaedics, harm reduction strategies include recommendations found in the CDC guideline for opioid prescribing for chronic pain (CDC, 2016). The purpose of the CDC guideline is to improve communication between clinicians and patients, improve safety, and reduce the risks associated with opioid use (CDC, 2016), which are similar to principles in harm reduction. The CDC guideline was formulated for primary care prescribing of opioids for chronic pain outside of active cancer treatment, palliative care, or end-of-life care. Chronic pain is defined as pain lasting more than 3 months or past the time of normal tissue healing. Included in the guideline is a recommendation for acute pain as well, which is to limit opioid prescription to 3–7 days (CDC, 2016). The guideline consists of 12 recommendations including on screening, education, medication type and dosage, and overdose prevention. The guideline allows for clinician judgment for actual treatment determinations. A clinician can choose not to follow a recommendation, and in that case documentation would be important to indicate the reason why. Although the guideline was developed for primary care, it is stated that the recommendations can be relevant for other specialties (CDC, 2016). In orthopaedics, when opioids are prescribed or used in the course of an OUD, harm reduction strategies support the patient and promote wellness to the highest degree possible, with an emphasis on prevention, treatment, and overdose prevention. Additional harm reduction strategies include education and screening.

### Prevention: Education and Screening

In keeping with harm reduction and the CDC (2016) guideline, nonpharmacological or nonopioid therapy should be recommended when indicated for orthopaedic patients. Evidence-based nonpharmacological intervention for pain management include complementary approaches such as mindfulness, emotional freedom tapping also referred to as energy field tapping or needless acupuncture, and acupressure (Chen & Wang, 2014; Church, 2014; Church & Nelms, 2016; Reiner, Tibi, & Lipsitz, 2013). Nonopioid therapy for pain includes nonsteroidal anti-inflammatory agents, anticonvulsants, and antidepressants (CDC, 2016). In orthopaedics,

blocks or multimodal analgesic injections have been found to be an effective alternative to opioid pain medication (CDC, 2016; Koehler et al., 2018).

Other strategies for prevention include education and screening. All patients who will be prescribed opioids should be educated about the risks of developing an OUD (CDC, 2016). Opioid contracts are useful when prescribing opioids and are formal written agreements between prescribers and patients that include potential risks and benefits of treatment, safe storage, prescribing policies, methods for monitoring opioid use, expected behaviors, consequences of violating the contract, and provisions to stop prescribing if there is no treatment benefit (CDC, 2016; Volkow, Benveniste, & McLellan, 2018).

Screening for an OUD or risk for developing an OUD is an important strategy in when considering prescribing opioids in orthopaedics. Screening, brief intervention, and referral to treatment (SBIRT) is an evidence-based method of screening patients where standardized instruments such as the Drug Abuse Screening Test (DAST-10) are used, followed by a brief intervention using MI techniques, and then referral to treatment as indicated (Aldridge, Linford, & Bray, 2017, NIDA, n.d.). The DAST-10 was condensed from the original 28 item test, developed and routinely utlilized as a brief drug use screening instrument that can be given in either a self-report or interview format (NIDA, n.d.; Skinner, 1982). It can be used with adults and older youth. Motivational interviewing is a harm reduction communication strategy that involves accepting patients where they are and working with them collaboratively in a nonjudgmental, nonconfrontational approach, which has been found to be an effective strategy when working with people at risk of SUD or those with identified SUDs (Substance Abuse and Mental Health Services Administration [SAMHSA], 2012a). The goal of MI is to help patients explore and resolve ambivalence about change and to assist the patients to come to their own conclusions about change in an interview where the patient does most of the talking rather than the clinician giving advice or stating facts about risks or consequences of use. Numerous online trainings for nurses are available including from the University of Pittsburgh (https://www.nursing.pitt.edu/continuing-education/enduringonline-activities/addiction-training-nurses).

Other screening instruments include the Addiction Behaviors Checklist, which is a 20-item instrument completed by the prescriber or nurse to document and assess for drug-seeking behavior when opioids are prescribed for pain (Wu et al., 2006). Items assessing addiction behaviors observed by the prescriber or nurse include whether patients report running out of medication early or if they obtained controlled drug prescriptions from more than one provider. Another helpful instrument to help identify patients who may be at risk for problematic effects of prescribed opioids is the Opioid Risk Tool, which is a brief self-report screening tool to assess risk when prescribing opioids for pain (Webster & Webster, 2005). Items include those with SUD history, family SUD history, and the presence of a mental health disorder. The Screener and Opioid Assessment for Patients with Pain is another instrument used to help guide opioid prescribing for pain and identify potential risk and includes questions about using the opioid medication more than prescribed and use of illegal drugs (Butler, Fernandez, Benoit, Budman, & Jamison, 2008).

In addition to screening instruments, prescription drug monitoring programs (PDMPs) are an important evidence-based method of screening when opioids are prescribed (CDC, 2016). Prescription drug monitoring programs are state run electronic databases that record the controlled drug history of patients (National Alliance for Model State Drug Laws, 2018). Rules vary per state as to which prescriptions are entered into the database and how often the database has to be accessed. In some states, it is mandatory that prescribers register with PDMPs and access the database at specified intervals (National Alliance for Model State Drug Laws, 2018). Designation is also made on a state-by-state basis as to whether a prescriber can use a delegate to access the online database. If it is determined that the patient is obtaining controlled drugs from other providers, this information should be used to modify the patient's treatment plan, provide support, and intervention but should not be used as foundation to discharge a patient from care as this could be grounds for patient abandonment (CDC, 2016).

Other screening strategy for patients who use opioids in orthopaedics is urine drug screening (CDC, 2016). For patients taking prescribed opioids, this can help determine if the patient is taking the medication as prescribed as well as to identify whether other controlled drugs are being taken. Urine drug tests should be used in order to provide safe and supportive care and should not be used as a punitive measure. If a patient shows positive for other substances or does not show positive for the substance he or she is prescribed, this provides an opportunity for support, teaching, and intervention.

## Treatment

The CDC guideline recommends that when prescribing opioids, pain severity should be assessed using the Pain Enjoyment and General Activity (PEG) Assessment Scale (CDC, 2016; Krebs et al., 2009). Patients should be screened for adverse effects, immediate-acting versus long-acting opioids should be used, and to use as low of a dose as possible, avoiding higher dose than 50 morphine milligram equivalents (MME) per day, and using caution when prescribing more than 90 MME per day (CDC, 2016). A 30% improvement of symptoms based on the PEG scale results is considered clinically meaningful, but if there is less than 30% improvement, the guideline suggests this is a reason to discontinue opioid therapy due to ineffectiveness (CDC, 2016).

Orthopaedic patients who are identified as having an OUD when they present for care or those who develop an OUD after opioids were prescribed for pain should be treated or referred for SUD treatment. Treatment of SUDs includes inpatient detox or rehabilitation, partial hospitalization, intensive outpatient treatment, recovery or sober living homes, individual counseling, and support groups (SAMHSA, 2018). Providers in orthopaedics should have access to information on treatment options in their community to share with patients. Having an SUD does not preclude pain treatment. In their joint position statement, the International Society

for Nurses on Addiction and the American Society for Pain Management Nursing recommend that patients with pain, including those with SUDs, are treated with dignity, respect, and high-quality pain assessment and management (Oliver et al., 2012). Best practice would include a multimodal analgesia plan where two or more classes of analgesics are prescribed to target different pain mechanisms (Rosier, 2017) as well as incorporating complementary approaches. Untreated pain in patients with SUDs can result in escalated use or relapse in those in recovery (Rosier, 2017). Along with taking precautions, pain management including opioids when indicated should be initiated for acute or chronic pain in patients with SUDs.

Patients with OUD who experience acute pain following an accident or unexpected surgery may be in a hospital setting or unable to obtain opioids and therefore need to be observed for withdrawal symptoms using a detox protocol such as the Clinical Opiate Withdrawal Scale (American Society of Addiction Medicine, 2015). Buprenorphine, a partial opioid agonist, is most commonly used to treat the withdrawal symptoms for people with OUD during detox. Once detox is completed over typically a 3- to 5-day period, opioid replacement therapy also called medication-assisted treatment (MAT) may be recommended using a combination drug containing buprenorphine and naloxone (an opioid antagonist meant to block other opioid use and reduce misuse of the medication through injection) or methadone (an opioid agonist). In MAT, opioids are prescribed as maintenance at low daily doses to reduce cravings and withdrawal symptoms and to restore neurotransmitter balance to a point where patients can function normally and not use other opioids.

Medication-assisted treatment has been proven to improve recovery rates (SAMHSA, 2016). Buprenorphine without naloxone and methadone are also approved for pain and therefore can be used to treat patients with pain receiving MAT but typically at higher doses (Rosier, 2017). However, the combination medication buprenorphine/naloxone is only approved for opioid dependence and can only be prescribed by providers with special training and DEA designation (SAMHSA, 2016). Special precautions need to be taken with methadone dosing for pain because methadone levels increase during the first few days of treatment and there is variable half-life among individuals that can lead to toxicity (SAMHSA, 2016). A complication with prescribing either the combination suboxone/naloxone medication or methadone for pain is the prescribing regulations. Addiction providers are trained and licensed to prescribe methadone (physicians) and buprenorphine (physicians, nurse practitioners, and physician assistants) for MAT but cannot do so for pain, whereas primary care or specialist providers can prescribe them for pain but cannot do so for addiction unless specially licensed. Treatment plans where the same medication is used for both pain, and as MAT will require collaboration between specialists so that patients receive specialist addiction treatment, provisions are made for the prescription of opioids for pain through a medical provider or in the case of buprenorphine/naltrexone at higher doses than for MAT, the medication must be prescribed by the addiction provider (SAMHSA, 2016).

Pain management for patients taking buprenorphine or methadone for MAT can be complicated by the fact that both these medications can block the effect of other opioid pain medications. However, studies have shown that immediate-acting opioids can be used when needed for pain in patients taking buprenorphine (Leighton & Crock 2017; Sen et al., 2016). For orthopaedic patients with OUD on MAT, a multimodal analgesia plan should be formulated when possible prior to a planned admission for surgery. For patients with acute pain who are taking buprenorphine for MAT, a management challenge is the 37-hour half-life of the buprenorphine, which will limit or disable additional opioid-binding ability to the brain receptors for analgesia (Rosier, 2017). Strategies for acute pain management in patients taking buprenorphine include the following: Continue buprenorphine and titrate short-acting opioids; divide the buprenorphine dose into 6- to 8-hour doses; discontinue buprenorphine 72 hours prior to any planned surgery and use opioid analgesics; discontinue buprenorphine and treat opioid dependence with methadone; and use short-acting opioids to treat acute pain (Rosier, 2017). For patients with buprenorphine implants, which can last for 6 months, nonopioid pain medication will be needed (Rosier, 2017).

Patients with OUD and chronic pain are already actively using opioids nonmedically; therefore, they should be referred for treatment without additional opioids prescribed (SAMHSA, 2012b). Often, pain will resolve once a patient is in recovery because pain is a normal withdrawal symptom in OUD and people experience withdrawal symptoms over the course of using when they regularly run out of the opioid. Once in recovery, if significant pain persists despite a trial of nonpharmacological or nonopioid approaches, a trial of opioids may be appropriate along with an opioid contract. Because of tolerance, patients with an OUD may require higher than average dose of an opioid medication to achieve pain control. Involving family members or support persons to safeguard the medication and assist in administration can be helpful to prevent nonmedical use. Dosing guidelines include that in the CDC (2016) guideline as well as that as when doses of opioids are initiated for severe pain, they should be titrated rapidly to avoid subjecting the patient to a prolonged period of dose finding. However, if relatively high doses are initiated, titration should be slower and determined to a great extent by the half-life of the drug (SAMHSA, 2016). Once a therapeutic dose is determined, the total opioid dose should be escalated slowly if at all as tolerance develops; therefore, realistic expectations should be discussed with the patient (SAMHSA, 2016). Because patients taking high doses of opioids are at risk of overdose, further measures such as prescribing naloxone are needed for prevention.

## Overdose Prevention: Naloxone

An important strategy in managing opioid use in orthopaedic patients is to ensure the overdose reversal medication naloxone is available to prevent opioid overdose deaths for patients prescribed high doses of opioids as a

course of their treatment or those who are identified as having an OUD. In the United States, one person every 20 minutes dies from an opioid overdose (NIDA, 2018b). Opioid overdose can occur accidentally when high doses of opioids are prescribed for pain or as a result of illicit opioid use often when a higher than expected potency of opioids are taken. Overdose deaths occur when opioid receptors desensitize the brainstem to rises in $CO_2$, which leads to respiratory arrest, followed by cardiac arrest (EMS1, 2016). Naloxone, also referred to as Narcan, which is the brand name of the medication, is an opioid antagonist that causes opioids to detach from brain receptors, which then results in normal respiratory function and reverses opioid overdose and death (NIDA, 2018a). People with OUD or those who are prescribed greater than 50 MME per day should receive a concurrent prescription for naloxone (CDC, 2016). Naloxone can be prescribed in all 50 states for patients at risk of opioid overdose, and in most states, third party prescriptions can be written that are those for professionals, friends, and family members who are in contact with those at risk (SAMHSA, 2018). Naloxone is available as an injection and a nasal spray, which is the formulation dispensed for patient use because of ease of use. However, the nasal spray is currently brand name only and is expensive, costing approximately $150 for a pack of two; therefore, a prescription is preferred so that insurance can cover the cost when available (Gupta, Shah, & Ross, 2016). Some states require training be given by a pharmacist when dispensed without a prescription (SAMHSA, 2018a). Many states are implementing laws to improve access to naloxone including the following: making it available without a prescription in 46 states; 43 states allow for it to be prescribed via a standing order; and 34 states have Good Samaritan laws, which provide immunity to prescribers (American Pharmacist Association, 2018; NIDA, 2018a). Providing naloxone to patients and those who have contact with people at risk is safe and cost-effective (Clark, Wilder, & Winstanley, 2014; Wheeler, Jones, Gilbert, & Davidson, 2015). Challenges for the use of naloxone to prevent overdose are the cost of the medication, barriers to access for people at risk, and the need for higher doses than usual due to the increased strength of synthetic opioids such as fentanyl and carfentanyl (Morgan & Jones, 2018).

## Conclusion

Nurses in orthopaedics are working with patients in whom pain is a common complaint often requiring opioid medications as part of treatment. Patients taking prescribed opioids are at risk for nonmedical use of opioids or to develop an OUD. In addition, patients with existing OUD will be seen in orthopaedics due to injuries that can result from impairment from their substance use or other unexpected traumas or injuries that result in acute pain. Patients with chronic pain are also seen in orthopaedics when acute pain does not resolve. Special considerations should be taken when prescribing opioids to prevent negative outcomes including the development of an OUD. Harm reduction strategies for orthopaedic patients taking opioids include those that prevent or reduce adverse outcomes from substance use and include education on risk for patients, screening patients for risk and misuse, implementing evidence-based treatment, and reducing opioid overdose risk with naloxone. Orthopaedic nurses are in a prime setting to provide leadership and consultation on best practices in their work environment and to implement harm reduction strategies that can have a positive impact on their patients' lives.

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For additional continuing nursing education activities on orthopaedic nursing topics, go to nursingcenter.com/ce.

# Calendar

## Upcoming Events

## Regional Offerings

### ONRCs:

July 12, 2019—ONRC BayCare Health System, Dunedin, FL.

### NAON Member Benefit Webinar Series:

July 24, 2019–Developing a Multimodal Postoperative Pain Management Protocol for Lower Extremity Orthopaedic Trauma Patients Webinar

August (actual date TBD)–The Birth and Growth of a Program: Creating Orthopaedic Nursing Excellence and Quality Patient Care through Simulation Webinar

September 16, 2019–Developing a Postoperative VTE Prophylaxis Guideline for Joint Replacement Webinar

### Reminders:

October 28-November 1, 2019–Orthopaedic Nurses Week (International Orthopaedic Nurses Day Wednesday, October 30, 2019)

### Upcoming NAON Education Product Releases:

Summer 2019–Online Orthopaedic Nursing Review Course (2019)

Summer 2019–NAON Practice Point Revision–Surgical Site Infection

### New NAON Education Live Course–Book Now!:

June 2019–Orthopaedic Nursing Roundtable Course (ONRC 2.0)

Events are current as of March 1, 2019 and are subject to change. Visit the NAON website (www.orthonurse.org) for a full listing of current events.

## National Offerings

March 13-14, 2019—**AAOS/NAON Nursing and Allied Health Courses, Las Vegas, NV.** http://www.orthonurse.org/aaos.

May 18-21, 2019—**NAON 39th Annual Congress.** Hyatt Regency Atlanta, Atlanta, Georgia. http://www.orthonurse.org/congressinfo2019.

June 28, 2019—**AOA Own the Bone Symposium,** San Diego, CA.