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OPIOID PRESCRIBING IN ORTHOPAEDIC SURGERY

An Evolving Paradigm

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Abstract

The opioid epidemic, which has taken the country by storm, will invariably change prescriber behavior and potentially expose overprescribers of narcotics to medical liability. Opioid therapy has been proven to be potentially addictive, dangerous, and of limited value in addressing acute and long-term musculoskeletal pain. Therefore, orthopaedic surgery practices should adopt policies for pain management that closely align with the current Centers for Disease Control and Prevention (CDC) guidelines.

In 2001, The Joint Commission, with the support of the Veterans Health Administration, unveiled its Pain Management Standards, which later led to pain being classified as the “fifth vital sign.” Since then, we have seen a surge in opioid prescriptions and subsequent deaths related to opioid overdose. According to the Centers for Disease Control and Prevention (CDC), nearly half of all opioid overdose deaths can be attributed to a prescribed narcotic¹. Opioid overdose is now the leading cause of accidental death in young adults, and nearly half of young adult heroin users abused prescription opioids before starting to use heroin²⁻⁴. The highest prevalence of high prescribers can be narrowed down to 3 medical specialties: family practice, internal medicine, and orthopaedics⁵. In recent years, orthopaedic opioid-prescribing rates have decreased to about 13.4%; while this is good news, orthopaedic surgeons remain as some of the highest prescribers of narcotics, with an average supply of about 51 to 55 days per prescription⁶.

Why are orthopaedic surgeons prescribing so many narcotics? First, orthopaedic surgeons, like other health-care providers, have been strongly encouraged to prioritize pain over other medical issues. Hospitals use qualitative

patient satisfaction surveys to rate provider performance, and a low rating from patients about their pain control and other clinical activities can negatively impact a provider’s employment and advancement opportunities. Second, the nature of orthopaedics involves many invasive procedures, such as spinal surgery, hip and knee replacement, ligament reconstruction, and internal fixation, to name a few. Because these procedures can be extremely painful, surgeons have relied on opioid therapy to address acute pain. With limited understanding about the potential addictive nature of these drugs, it is not uncommon for surgeons to recommend a predetermined quantity of narcotics to address postoperative pain⁷. Some would argue that opioids prescribed in the days and weeks following orthopaedic surgery are of relatively low risk and usually do not lend themselves to addiction. Nothing can be further from the truth.

Research shows that the risk of long-term use and opioid dependency can begin with an initial 8 to 10-day supply of narcotics, and the chance that patients are still taking opioids a year later is about 13.5%^{8,9}. A 30-day supply of narcotics can increase the risk of narcotic use after a year to nearly 30%⁸. It is doubtful that orthopaedic surgeons want

their patients on narcotics a year after surgery, even after invasive procedures such as arthroplasty, osteotomy, or arthrodesis. So, given the prescribing patterns of most surgeons, how are orthopaedic providers expected to positively impact the opioid epidemic?

First, orthopaedic providers should be familiar with a variety of clinical tools and research to identify drug-seeking behavior and guide adequate pain control while reducing the chances of iatrogenic opioid dependence. In addition, orthopaedic providers should register and become aware of statewide Prescription Drug Monitoring Programs (PDMPs), which track the prescribing and dispensing patterns of clinicians¹⁰. The CDC endorses and recommends the use of PDMPs. These monitoring programs have been relatively successful in reducing the number of opioid prescriptions, drug-related hospitalizations, overdose deaths, drug diversion, and doctor shopping^{10,11}. Furthermore, some PDMPs can help to identify patients who are being prescribed other medications that may increase the risk of opioids, such as benzodiazepines. It is not uncommon these days to find patients on antispasmodics, cough medicines, and/or benzodiazepines in combination with narcotics, which could be potentially life-threatening¹². A recent study found that overdose death rates among patients who were codispensed opioid analgesics and benzodiazepines were 10 times higher than among patients who were dispensed opioid analgesics alone¹². The U.S. Food and Drug Administration (FDA) has issued a strong warning on the use of these deadly drug combinations, and clinicians need to be very cautious to not prescribe narcotics when patients are taking sedatives¹².

Orthopaedic providers should be aware that not all PDMPs track medications outside of Schedule-II opioids. Moreover, some states allow patients to opt out of PDMPs for privacy reasons, making it difficult to

track their narcotic history. Therefore, it is incumbent on the clinician to conduct a thorough medical and social history and a review of current medications prior to prescribing opioids. When a query is completed, it should be documented in the patient's chart. While it is understandable that it may not be feasible to query every patient in very busy orthopaedic practices, ideally, PDMP data should be reviewed before prescribing opioids⁹. Additionally, the CDC recommends that patients given narcotics should be educated on potential side effects, such as dependence, cognitive impairment, itching, constipation, and potential drug interactions, and about nonopioid treatments and the dangers of acquiring multiple prescriptions from more than 1 provider. This also should be documented in the patient's chart. As a general rule of thumb, clinicians suspecting drug misuse should consider ordering a urine drug screen. Orthopaedic providers desiring additional resources on pain management can look to the American Academy of Orthopaedic Surgeons (AAOS), which has developed a pain relief tool kit (<https://www.aaos.org/Quality/PainReliefToolkit/?ssopc=1>) and patient safety resources for both clinicians and patients (<https://www.aaos.org/about/PatientSafetyResources.aspx?ssopc=1>).

These rich educational materials help clinicians navigate preoperative and postoperative pain relief, discuss appropriate screening tools to decide a patient's risk of opioid addiction, identify evidence-based strategies for relief of musculoskeletal pain in the emergency room setting, provide a broad overview of CDC pain management guidelines, and much more. When addressing acute or chronic pain, orthopaedic practices are encouraged to adopt multimodal treatment regimens consisting of pharmacologic and nonpharmacologic interventions, including physical and aquatic therapy, cutaneous stimulators,

acupuncture, cognitive behavioral techniques, topical anesthetics (capsaicin products), local therapies, bracing, trigger blocks, psychological approaches (biofeedback, relaxation, cognitive modalities), platelet-rich plasma (PRP), and cortisone injections. Nonsteroidal anti-inflammatory drugs (NSAIDs), including cyclooxygenase-2 (COX-2) inhibitors, have become an excellent alternative to opioid therapy. In fact, studies have shown that acetaminophen and NSAIDs are just as effective as opioids; however, some providers are reluctant to use NSAIDs because of the potential effect on the molecular and cellular processes of bone regeneration, which can inhibit bone healing and formation^{13,14}. The American Pain Society, with input from the American Society of Anesthesiologists, found insufficient evidence to recommend against the use of NSAIDs for postoperative pain relief after orthopaedic surgery^{15,16}. Consequently, Celebrex (celecoxib) administration postoperatively has been linked to reduced opioid requirements and lower pain scores following surgery^{17,18}. In addition, the use of acetaminophen combined with a short course of NSAIDs has been shown to be more effective in addressing postoperative pain than opioids alone^{19,20}. However, NSAID use remains controversial in the elderly population and in patients with certain comorbidities and risk factors⁹. Nevertheless, the use of opioids should be discouraged in patients with most orthopaedic conditions, especially during the preoperative phase. Data suggest that orthopaedic patients who did not use opioids prior to total joint surgery were less likely to report persistent opioid use postoperatively²¹. Additional research supports that total knee (odds ratio [OR], 5.10; 95% confidence interval [CI], 4.67 to 5.58; $p < 0.001$) and hip surgeries (OR, 2.52; 95% CI, 2.11 to 3.01; $p < 0.001$) are associated with an increase in chronic opioid use, and prescribing opioids prior to surgery is

associated with worse pain outcomes^{22,23}. Providers choosing to prescribe opioids for an extended period of time preoperatively may predispose their patients to a condition known as opioid-induced hyperalgesia (OIH). This phenomenon, which is still being studied and is most often described as a decrease in pain threshold after opioid exposure, is thought to have a genetic predisposition²⁴. Patients who develop OIH have a difficult time achieving adequate pain control, and tapering off narcotics can be complex and difficult.

In addition, long-term use of opioids and synthetic alternatives has been associated with endocrine changes such as opioid-induced androgen deficiency (OPIAD), which can suppress the hypothalamic-pituitary-gonadal axis and lead to osteoporosis, osteopenia, and hormonal deficiencies such as hypogonadism^{25,26}. Moreover, chronic use of opioids has been linked to negative effects on fracture-healing in an animal study²⁶.

When opioids are used, the CDC recommends that clinicians start with a low-dose immediate-release opioid for no more than 3 to 7 days for nonsurgical acute pain⁹. Short-acting opioids are considered appropriate for transient pain and chronic intermittent pain^{27,28}. However, prescribers should be very cautious about prescribing short-acting opioids in the elderly population because of a substantially greater risk of fracture from falls, especially within the first couple of weeks²⁹. The CDC also recommends limiting the use of extended-release/long-acting (ER/LA) opioids, and, if possible, these drugs should be avoided in the treatment of musculoskeletal pain. Some in the orthopaedic community may disagree that a 3 to 7-day supply of opioids is sufficient to acquire or sustain adequate pain control for orthopaedic conditions such as polytrauma, amputation, arthroplasty, a mangled extremity, and other

orthopaedic conditions when pain control is essential to improve recovery times. This may be partly true, but long-term opioid use for 1 to 3 months following surgery is associated with poor functional status, reduced likelihood to return to work, and psychological illness, regardless of the type of surgery or injury^{30,31}. Early mobilization coupled with physical therapy has been shown to lower the analgesic requirements in the long term, and improve the emotional state of patients³². Additionally, tapering or discontinuation of long-term opioid therapy may improve function, pain, and quality of life³³. Moreover, not all patients fully utilize opioids for pain control postoperatively. A recent study by the Johns Hopkins School of Medicine, which examined 6 studies and identified 810 patients who received a narcotic prescription in anticipation of surgery, found that 92% of the patients did not finish their postoperative pain medication, and in some cases, never even filled the prescription³⁴. Another study, which reviewed the opioid consumption of 250 patients following elective outpatient upper-extremity surgery, found that over half of the patients reported taking the narcotic medication for ≤ 2 days; the study concluded that a prescription of 30 opioid pills for postoperative pain relief was excessive and unwarranted and could lead to diversion³⁵. This begs the question of whether prescribing narcotics preoperatively and postoperatively for urgent and elective cases is good medicine.

In patients with neuropathic pain due to crush injuries, amputations, and severe soft-tissue damage, providers may want to consider the use of gabapentin, serotonin-norepinephrine reuptake inhibitors (SNRIs), or tricyclic antidepressants (TCAs) as possible first-line treatment³⁶. Since orthopaedic providers have limited training in the use of antidepressant therapy to help ameliorate pain, perhaps the primary care provider is better suited to prescribe these

medications, especially given the risk of increased suicide rate associated with the use of antidepressants in adolescent patients³⁷. Finally, the use of synthetic opioids to treat acute-to-severe pain remains controversial. Tramadol (Ultram), a commonly prescribed Schedule-IV drug, has been proven to be quite effective in treating moderate-to-severe musculoskeletal pain, but it should never be given to patients who take sleeping agents, anticonvulsants, or antidepressants, or to alcoholics. Tramadol has been touted as a great alternative to traditional opioid therapy, and the extended-release version has been found to be effective in reducing opioid withdrawal symptoms³⁸. However, tramadol is a habit-forming drug and should be avoided in patients with a history of addiction.

Utilizing Newer Technologies in Combating the Opioid Epidemic

Orthopaedic practices may want to consider a number of new technologies to help address their patients' chronic pain. Wearable technologies such as Quell (NeuroMetrix), which uses advanced neurotechnology to improve chronic pain, are getting some press³⁹. Quell supposedly works in a manner similar to narcotics and other pain medications that block pain signals; the FDA has cleared it for use. Another technology of value is telehealth, which is being utilized to help improve pain management through communication and information sharing, which helps clinicians adjust patient care plans to fit individual needs⁴⁰. The telehealth market has been growing for some time as providers look to free up clinic spots and improve clinical efficiency. Telehealth has been shown to reduce chronic pain through better monitoring and reduced opioid use⁴¹. Another resource is the National Institute on Drug Abuse (NIDA), which publishes user-friendly evidence-based screening tools and supplemental materials to assist

providers in combating opioid addiction. Also, there are quite a few mobile phone technology products available on the market, such as the MATx free app (SAMHSA), which, according to the app's web site, supports practitioners who currently provide medication-assisted treatment (MAT). These technologies and other similar products are available to help improve point-of-care decision-making.

Bipartisan Legislation and Opioid Restrictions

Senators John McCain and Kirsten Gillibrand have drafted and introduced bipartisan legislation to help curb the opioid epidemic. Specifically, the legislation requires medical professionals to certify, as part of their Drug Enforcement Agency (DEA) registration, that they will not prescribe an opioid as an initial treatment for acute pain in an amount that exceeds a 7-day supply⁴². This is not applicable to people with chronic pain due to malignancy, end-of-life care, or palliative care. At least 46 Medicaid programs have imposed limits on the number of opioid prescriptions⁴³. Nearly 45 states require authorization, and 42 states require proof that patients meet medical criteria for opioid therapy⁴³. Consequently, large insurers, such as Blue Cross Blue Shield and Kaiser Permanente, have imposed 30-day supply limits on narcotics because of safety concerns. Eleven states have enacted laws limiting opioid prescriptions for acute pain, ranging from a 3-day supply to a 7-day supply. It is anticipated that many more states will enact similar laws and, as a result, orthopaedic practices will need to change their prescribing patterns to adhere to new CDC pain management guidelines, which some speculate will become the standard of care. The medical community may feel that opioid supply restrictions infringe on patient care and clinical autonomy. However, it appears that the public supports the recommendations of the CDC and state regulators to curb opioid

use. This is underscored by a STAT-Harvard poll in which 70% of Americans agreed that physicians should limit opioid prescriptions to a 3-day supply for most causes of acute pain⁴⁴. The same poll revealed that Americans preferred nonopioid modalities as the first option in the treatment of chronic pain. The days of prescribing narcotics beyond a 3-day supply for nonmalignant musculoskeletal conditions may soon be coming to an end.

The Role of the DEA in Addressing the Opioid Epidemic

The DEA has limited narcotic access for patients and providers, and the White House, through an Executive Order, created the National Opioid Commission to look at ways of curbing chronic opioid use. Through enforcement activities, the DEA has accepted the surrender of >3,600 prescribing licenses nationwide, and has revoked nearly 100 licenses⁴⁵. The agency uses "red-flag" indicators that can trigger an investigation into a provider's practice. Some of the red-flag indicators are listed below⁴⁶:

- The practice is cash only.
- Does not bill an insurance company.
- High number of out-of-state patients.
- High proportion of Schedule-II and III narcotics relative to legend drugs.
- Patients travel long distances to fill prescriptions.
- The provider is not board-certified, or practices outside of his or her specialty (i.e., a general practitioner practicing pain management).
- High number of family members in a pain management practice.
- Lack of interventional techniques or physical therapy.
- High number of "doctor shoppers."
- High number of patients per day (i.e., 30 to 40 versus 15 to 25).

The DEA does not need a warrant for a compliance investigation. Orthopaedic providers should pay

close attention to these red flags and make changes to their prescribing patterns if necessary.

Conclusions

There is no one-size-fits-all approach when treating acute and chronic pain in orthopaedics, especially when practice dynamics, employee engagement, training, patient characteristics, shifting demographics, resources, determinants of health, and a whole host of other factors are taken into account. Pain management requires a multifactorial, interdisciplinary approach that incorporates complementary and alternative medicine (CAM) modalities. The opioid epidemic, which has taken the country by storm, will invariably change prescriber behavior and potentially expose overprescribers of narcotics to medical liability. Opioid drug therapy has been proven to be potentially addictive, dangerous, and of limited value in addressing acute and long-term nonmalignant musculoskeletal pain. Therefore, orthopaedic surgery practices should adopt policies for pain management that closely align with current CDC guidelines^{9,47}. The AAOS has launched an aggressive national campaign to positively impact the opioid epidemic, and we must all do our part by rethinking how we treat acute and chronic pain in the orthopaedic setting.

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