The Opioid Epidemic and the Need for a Pain Strategy

3

Tory L. McJunkin, Paul J. Lynch, and Edward L. Swing

Introduction

Opioids are one of the most commonly used treatments for chronic pain in the USA, with over 250 million prescriptions written each year. Approximately 38 percent of the US population receives an opioid prescription in a given year. Opioids are generally regarded as effective and appropriate for acute pain as well as cancer pain, but considerable controversy exists about the appropriateness of long-term opioid use for chronic noncancer pain. In addition to concerns about the efficacy of long-term opioid therapy, there is concern about the potential for patients to abuse opioids, with harmful or even fatal consequences. An estimated 64,000 Americans died of drug overdose in 2016, with opioids causing the vast majority of these deaths. Opioids are now responsible for more deaths than traffic accidents. Though many of these deaths are the result of illicit opioids (e.g., heroin, nonpharmaceutical fentanyl), opioid prescribers still bear a special responsibility as many opioid abusers became addicted to prescription opioids before turning to illicit opioids due to the cost or difficulty of obtaining prescription opioids. Opioids remain a useful therapy for some chronic pain patients, but there is a clear need for a strategy for delivering opioid therapies.

When opioids are used for treating chronic noncancer pain, it should be as part of a comprehensive pain management approach including conservative care (rest, icing), physical treatments (chiropractic care, physical therapy), non-opioid medications (NSAIDs, membrane stabilizers, muscle relaxants), psychological treatments (cognitive therapy, biofeedback), interventional treatments (nerve blocks, epidural steroid injections, nerve radiofrequency ablations), regenerative treatments (platelet rich plasma and stem cell injections), and implanted device therapies (spinal cord stimulators). Most or all of these therapies are lower risk than opioids. A comprehensive approach has the potential to provide greater pain relief in conjunction with opioids as well as reduce patient risk by lowering opioid doses or discontinuing opioids altogether. Additionally, an effective and responsible approach to prescribing opioids should include safety practices such as dosage limits, repeated urine drug testing, and the use of state prescription drug monitoring programs. Such practices help identify possible opioid abuse, allowing providers to discontinue opioid therapy for patients who are unable to safely use these drugs. These patients may continue to receive other pain treatments, including nonnarcotic medications, injection treatments, and implanted device therapies.

Background and Historical Perspective

The first evidence for the cultivation of poppies and the isolation of opium from them is found among the Sumerians (in modern day Iraq) dating back to the third millennium BCE. The Sumerian word for poppies means "plant of joy." Initial uses of opium included religious rituals, medicinal purposes, and recreational use. The use of opium is described by Greek writers (e.g., Theophrastus) by 300 BCE. Ancient physicians used opium treatments such as spongia somnifera (sponges soaked in opium used to relieve pain during surgery), though some were wary of these treatments because the potency and absorption rate could not be controlled, making them dangerous. By the eight or ninth century CE, Arab traders had brought opium to India and China and to various parts of Europe between the tenth and thirteenth century CE.

Morphine, the active ingredient in opium, was first isolated and named by Sertürner in 1806, with codeine following a few years later. The invention of the hypodermic syringe in the 1850s enabled morphine to be used in minor surgical procedures as well as for chronic and postoperative pain. When heroin was developed in 1898, it was felt that, as

T. L. McJunkin · P. J. Lynch · E. L. Swing (✉)
Arizona Pain Specialists, Scottsdale, AZ, USA
e-mail: DrMcJunkin@PainDoctor.com; DrLynch@PainDoctor.com; TedS@PainDoctor.com

T. R. Deer et al. (eds.), *Deer's Treatment of Pain*, https://doi.org/10.1007/978-3-030-12281-2_3

a more potent drug than morphine, doses could be better controlled, therefore making it less addicting. This claim has been repeated for other opioids developed since, though in each case it remains unsupported by the available evidence. Various synthetic and semisynthetic opioids (synthetic drugs affecting the same receptors as natural opiates) were developed during the twentieth century, including oxymorphone (1914), oxycodone (1916), hydrocodone (1920), hydromorphone (1922), methadone (1946), fentanyl (1959), and buprenorphine (1969).

Prior to the 1990s, the use of opioids in the USA was largely limited to acute pain (e.g., from trauma or surgery) and cancer pain. During the 1990s, many physicians were taught that chronic noncancer pain was undertreated and that opioids were a safe and appropriate therapy for treating such pain. Between 1990 and 2000, the rate of opioid prescriptions rose from 8 percent of physician visits to 16 percent. Prescription opioid use in the USA has continued to grow since 2000, from an equivalent morphine dose of 46,946 kg to 148,316 kg in 2014. Prescription opioids appear to have peaked in the USA in 2012 at 165,525 kg, declining somewhat since. Opioid-related deaths, on the other hand, have continued to rise, from about 3 per 100,000 in 2000 to 9 per 100,000 in 2014.

This increase includes two separate trends – (1) an increase in deaths caused by prescription opioids (e.g., morphine, oxycodone, and methadone) and (2) an increase in deaths linked to illicit opioids (e.g., heroin and fentanyl). Deaths from prescription opioids have been relatively steady since 2012, whereas deaths from illicit opioids (fentanyl in particular) have risen dramatically over that time period. In many cases, states that have implemented policies to restrict prescription opioid abuse have seen increases in illicit opioid use as some opioid users switch from prescription to illicit opioid use. The shift of some individuals from prescription opioids to illicit opioids represents a challenge for reducing opioid deaths. Nevertheless, efforts among US physicians to implement policies and systems that can limit the harmful consequences of opioids remain important as medical prescriptions remain a major factor in the development of opioid addiction.

Uses and Indications

Studies have found that approximately 18% of patients receiving opioids demonstrate aberrant medication taking behavior. This includes testing negative for prescribed opioids, testing positive for non-prescribed opioids or other prescription drugs, and testing positive for illicit drugs. One study found that, among those taking opioids non-medically, approximately 71% received them from a friend or family member (with 79% of those friends/family members having received the opioids from a doctor's prescription). Given this significant risk of diversion and abuse, when opioids are used for chronic, noncancer pain, a number of practices should be taken to reduce these risks.

The US Centers for Disease Control and Prevention (CDC) issued guidelines for primary care physicians initiating opioid therapy for chronic noncancer pain, including:

- Setting realistic goals for opioid therapy
- First trying non-opioid therapies
- Discussing the risks and benefits of opioids with the patient
- Evaluating the risk of harm or misuse
- Starting with a low dose of a short-acting opioid

Additionally, the CDC recommends that patients receiving ongoing opioid therapy continue to be evaluated for risk of harm or misuse with:

- Urine drug testing (both to confirm the presence of prescribed medications and the absence of any non-prescribed or illicit drugs)
- Checking the state prescription drug monitoring program for opioid prescriptions from other sources
- Offering naloxone, an opioid antagonist that can be used to reverse an opioid overdose, to patients taking moderate doses (≥50 MME)
- Avoiding doses of greater than or equal to 90 MME

Evidence for Efficacy

The clinical evidence offers support for the short-term use of opioids as an effective treatment for chronic pain. A meta-analysis found that the short-term use of opioids relieved an average of 28% of pain, compared with 7% for placebo. Patient and physician expectations for the outcome of opioid therapy should be tempered by this finding. Thus, patients experiencing partial pain relief (e.g., 30%) from opioids should generally not have the dosage increased. Higher doses increase the risk of death: patients taking more than 100 milligram morphine equivalent (MME) have approximately nine times the risk of a fatal overdose compared with patients taking less than 100 MME. Further, higher opioid doses may increase the risk of opioid-induced hyperalgesia, a condition in which opioids actually sensitize the patient to pain, leading to greater pain associated with the underlying condition.

The evidence for the efficacy of long-term opioid therapy is much more limited. The vast majority of randomized,

blinded trials of opioids lasted less than 16 weeks. A few studies have examined longer time periods (e.g., 6–18 months). These studies found that patients receiving long-term opioid therapy experienced an average of 63% less pain. This finding is qualified by the fact that these studies tend to experience very high dropout rates (between 52% and 88%) due to a combination of reasons, such as adverse events or insufficient pain relief. These findings are thus more difficult to interpret. It appears that at least some patients continue to get pain relief from long-term opioid therapy. However, given the substantial risks associated with opioid use, they should be utilized as part of a comprehensive pain management approach including appropriate restrictions (e.g., a dosage limit) and precautions (e.g., urine drug testing).

Pearls and Pitfalls

- High doses of opioids are associated with higher risk of overdose or death.
- Set an upper limit for highest level of opioids to be prescribed for chronic noncancer pain.
- Concurrent use of benzodiazepines, barbiturates, psychiatric medications, or other sedating medications significantly increases the risk associated with opioids
- One must risk stratify patients (e.g., low, moderate, or high) currently on opioids and test for use, misuse, and abuse.
- Patients and physicians must have realistic expectations for efficacy (30–40% reduction in pain) when using opioids chronically.
- Opioids should be thought of as a "high-risk" therapeutic option, and other more conservative approaches should be maximized or exhausted before chronic use.
- Observe and follow state and national guidelines and recommendations.

Recommended Reading

1. Bloodworth D. Issues in opioid management. Am J Phys Med Rehabil. 2005;84(3 Suppl):S42–55.
2. Brownstein MJ. A brief history of opiates, opioid peptides, and opioid receptors. Proc Natl Acad Sci U S A. 1993;90:5391–3.
3. Centers for Disease Control and Prevention. Checklist for prescribing opioids for chronic pain. Accessed 11/21/2017 from https://www.cdc.gov/drugoverdose/pdf/pdo_checklist-a.pdf.
4. Manchikanti L, Kaye AM, Knezevic NN, et al. Responsible, safe, and effective prescription of opioids for chronic non-cancer pain: American Society of Interventional Pain Physicians (ASIPP) guidelines. Pain Physician. 2017;20:S3–S92.
5. Noble M, Tregear SJ, Treadwell JR, Schoelles K. Long-term opioid therapy for chronic noncancer pain: a systematic review and meta-analysis of efficacy and safety. J Pain Symptom Manag. 2008;35(2):214–28.
6. Paulozzi LJ, Jones CM, Mack KA, Rudd RA. Vital signs: overdoses of prescription opioid pain relievers—United States, 1999–2008. CDC Morb Mortal Wkly Rep. 2011;60(43):1487–92.
7. Sehgal N, Manchikanti L, Smith HS. Prescription opioid abuse in chronic pain: a review of opioid abuse predictors and strategies to curb opioid abuse. Pain Physician. 2012;15(3S):ES67–92.