

# Dentists' Current and Optimal Opioid Prescribing Practices: A Proactive Review

by William R. Reynolds, DDS, MD & Evan S. Schwarz, MD

**The proportion of dental prescriptions written for opioids in the U.S. was 37 times higher than that in England (22.3% vs 0.6%). These discrepancies held when corrected for population and number of dentists.**

## Introduction

The large amount of opioid prescriptions currently written contribute to an unprecedented epidemic in the United States. In 2015, Health and Human Services (HHS) estimates that 12.5 million individuals misused prescription opioids and 33,091 individuals died following an opioid overdose.<sup>1-3</sup> Practitioners of medicine, surgery, and dentistry have noticed the increased number of opioid prescriptions in their practices. Patients for years have requested, expected and, received opioids for many of the common procedures and conditions in the practice of surgery and dentistry. These expectations and demands, and physician/dentist compliance must change to abate the morbidity and mortality of opioid abuse.

## Scope of the Opioid Problem

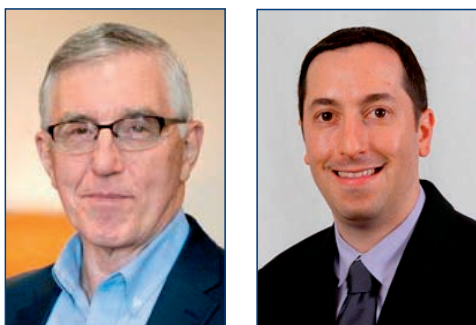
It is interesting, and disturbing, that dentistry represents a minority of health care providers but accounts

for a large number of prescribed opioids. This was clearly demonstrated in papers published in major society journals.<sup>4,5</sup> When compared to dentists in England, dentists in the United States prescribe vastly more opioids.<sup>6</sup> This was demonstrated in a population-level analysis of national databases in the United States and England. U.S. data was obtained from IQVIA LRx which captures 85% of all outpatient prescriptions. Data from England came from the NHS Digital Prescription Cost Analysis, which covers 84.2% of the UK population. In 2016, U.S. dentists wrote more than 11.4 million opioid prescriptions while dentists in England only wrote 28,082. The proportion of dental prescriptions written for opioids in the U.S. was 37 times higher than that in England (22.3% vs 0.6%). These discrepancies held when corrected for population and number of dentists. Tompach reported in the *Journal of Oral and Maxillofacial Surgery* that dentists have actually decreased the volume of opioid prescriptions from a high of 15.5% in 1998 to 6.4% in 2012. However, the number of opioid prescriptions per 1,000 dental patients increased in patients 11-18 years of age.<sup>7</sup> Importantly adolescents that received prescription drugs are at an increased risk of future misuse of opioids.

## A Safer Alternative to Opioids

It is a goal of practicing dentists to control pain after dental procedures. The large number of opioids prescribed for dental pain are usually for the acute pain occurring with an infection, surgical removal of teeth, periodontal surgery and dental implants. Long term dental pain associated with Temporomandibular Joint (TMJ) Syndrome, for example, does not represent a large number of opioid prescriptions.<sup>8</sup>

As the physiological and biochemical understanding of pain is better elucidated, medicines more suitably directed at the source of pain were prescribed. For example, in a routine tooth extraction or rotation flaps in periodontal surgery, the acute phase of healing releases prostaglandins



William R. Reynolds, DDS, MD, (left), MSMA member since 1996 and *Missouri Medicine* Contributing Editor, is a Plastic Surgeon in Springfield, Missouri. Evan S. Schwarz, MD, FACEP, FACMT, (right), MSMA member since 2014, is Associate Professor of Emergency Medicine, Medical Toxicology Section Chief, Division of Emergency Medicine, Washington University School of Medicine, St. Louis, Missouri. Contact: [wreynoldsm@aslc.com](mailto:wreynoldsm@aslc.com)

**Table 1. Pharmacologic Recommendations for Post-Operative Dental Pain**

Pain Severity	Therapeutic Intervention
Mild	Ibuprofen 200-400 mg q 4-6 hours
Mild to Moderate	Ibuprofen 400-600 mg q 6 hours for 24 hours Ibuprofen 400 mg q 4-6 prn pain on POD #1 (after first 24 hours)
Moderate to Severe	Ibuprofen 400-600 mg with APAP 500 mg q 6 hours for 24 hours. Ibuprofen 400 mg with APAP 500 mg q 6 hours on POD #1 (after first 24 hours)
Severe	Ibuprofen 400-600 mg with APAP 650 mg and Hydrocodone 5 mg q 6 hours for 3 days; then Ibuprofen 400-600 mg with APAP 500 mg q 6 hours on POD #4 (after first 72 hours).
If NSAIDs are contraindicated	
Mild	APAP 650-1000 mg q 6 hours for pain
Moderate	APAP 650-1000 mg with hydrocodone 5 mg q 6 hours for 3 days; then APAP 650-1000 mg q 4-6 hours (after first 72 hours)
Severe	APAP 650 mg with hydrocodone 5 mg q 6 hours for 3 days, then APAP 650-1000 mg q 6 hours (after first 72 hours)

APAP acetaminophen (Tylenol)

Ibuprofen maximum daily dose is 2400 mg

APAP maximum daily dose is 3000 mg

Adapted from References: 4,7,11,13,14

from the injured tissue. This contributes to acute post procedural inflammatory mediated pain at the site of injury. Non-Steroidal Anti-inflammatory Drugs (NSAID) are inhibitors of prostaglandin formation and are used to help control pain locally. It is better to prescribe NSAIDs for such cases as it targets the source of pain. NSAIDs do not affect cognition or motor skills so that the patient can return to their normal activities.<sup>9,10</sup> Opioids act centrally and can affect cognition and secondarily motor skills.

This NSAID therapeutic strategy augments long held surgical axioms like “Control the infection and control the pain” or “Control the inflammation and control the pain.” These axioms represented the clinical thinking of common-sense surgical practice before the biochemical and physiological understanding that exists now. Optimally, if an infection is present prescribe the appropriate antibiotic and an NSAID instead of adding an opioid such as codeine, hydrocodone, or oxycodone.

Controlled studies and best practices are being developed which incorporate this newer paradigm that uses non-opioid drugs which are more effective in eliminating pain after dental procedures. An extensive review of the dental literature, concluded “the use of NSAIDS, with and without acetaminophen, is equal or superior to that provided by opioid-containing medications.”<sup>11,12</sup>

Table 1 is a summary of recommendations from published papers for control of post-operative dental pain.

The therapeutic recommendations are based upon the patient’s perceived degree of pain or the clinical experience of the practitioner. For example, what type of pain the clinician would expect for a particular procedure e.g. a simple tooth extraction (mild pain) vs an impacted 3<sup>rd</sup> molar extraction (severe pain). The generally accepted best practices recommend that opioids should be reserved for a minority of clinical situations in which NSAIDs provide inadequate pain control.<sup>4,7,13</sup> If opioids are prescribed, risks should be discussed with the patient and should be prescribed at the lowest effective dose.<sup>13</sup>

**One Opioid Prescription Can Create a Lifetime of Addiction**

In susceptible individuals a single opioid prescription can lead to a lifetime of addiction. It is extremely important to limit opioid exposure especially if other alternatives may provide adequate pain relief . While only a small number of patients will develop an opioid use disorder, we unfortunately have limited means to determine who they are.<sup>15</sup> There is plentiful literature demonstrating sustained opioid use of approximately 5-7% following an initial prescription in opioid naïve patients.<sup>16,17</sup> Dentistry and dental complaints are no different. A retrospective cohort of opioid naïve patients from a research database of claims data aged 18-25 was reviewed.<sup>18</sup> Any patient with an opioid use disorder or with certain complex

chronic conditions were excluded. All patients received the initial opioid prescription following a dental complaint or procedure. All patients received a prescription for an opioid from a dental clinician and had not received a prescription for an opioid in the 12 months preceding the prescription. They were maintained in the insurance database for 12 months following the initial prescription. Nearly 30,000 of the 754,002 patients in the database received a prescription from a dental provider in 2015, with 14,888 receiving opioids. Of those, 1,021 patients (6.9%) received another opioid prescription 90-365 days later. In this same database, a randomly-selected cohort of age and sex matched controls that did not receive an opioid were also studied. Of these 29,776 patients, only 30 patients (0.1%) received an opioid within the next 365 days (adjusted absolute risk difference of 5.3%; 95% CI 5.0%-5.7%). Most of the repeat prescriptions were not provided by a dental provider (73%) with a median number of 20 pills (interquartile range of 16-28) being dispensed in the second prescription. This does not imply that all patients that received a second prescription developed an opioid use disorder; 866 of the 14,888 (5.8%) that received an opioid did later receive an opioid-abuse related diagnosis. A second study reviewed patients aged 13-30 years in the Truven Health MarketScan Commercial and Dental database with persistent opioid use following wisdom tooth extraction.<sup>19</sup> Patients could not have filled an opioid prescription within 6 months of the index prescription or have had additional anesthetic or dental procedures for a year following the dental extraction. The primary outcome was opioid prescriptions filled either 4-90 days or 91-365 days after the procedure. Nearly 57,000 patients (80%) filled a prescription for an opioid following wisdom tooth extraction. Persistent opioid use occurred at an adjusted rate of 13 per 1000 patients (95% CI 9-19) in the group that filled an opioid prescription compared to 5 per 1000 patients (95% CI 3-7) that did not initially fill a prescription.

### What Dental Schools are Doing to Optimize Opioid Prescribing

Curriculums in medical and dental schools are now being taught that incorporate a better understanding of opioid and NSAIDs as therapeutics. As such, this new generation of dental practitioners will hopefully help abate the current opioid crisis. The Committee on Dental Accreditation implemented standards that require schools to address opioid prescribing and misuse.

Through an NIH grant, Massachusetts dental schools (Harvard, Boston University and Tufts Dental Schools) have addressed core competencies in prescribing opioids using training modules. Dental, medical, nursing and pharmacy students are taught pain management in such a way to address the opioid crisis.<sup>20</sup> Dental schools in Missouri are also incorporating this into their curricula. At the University of Missouri-Kansas City (UMKC), students receive specific didactic instructions in their second year which is continued during their third and fourth year rotations. Students learn about illicit and prescription drugs, opioids, substance abuse, and ethanol abuse and their effects on patients. SBIRT (screening, brief intervention, and referral to treatment) is also part of their third year curriculum. Online courses as well as role play scenarios and standardized patient scenarios are mandatory parts of their education. A.T. Still University Missouri School of Dentistry & Oral Health is also being proactive about addressing opioid use and substance use in their curriculum. Hopefully, all medical schools will follow the example of these and other dental schools in the state.

### What the Missouri Legislature is Doing

Politicians are already addressing the opioid crisis with bills, laws and regulations. Their perception is medical and dental professions are not doing enough and contributed in a major way to the opioid epidemic. The most recent data concerning overdose deaths demonstrates a national decrease for the first time in many years. While deaths from illicit opioids are still increasing, deaths from prescription opioids may be decreasing. Unfortunately, opioid associated deaths in Missouri are still increasing. Currently, the legislative efforts of Missouri are aimed at addressing opioid prescribing as a means to reduce doctor shopping for opioid prescriptions. Due to the current opioid epidemic and prior prescribing practices, politicians stepped in to legislate a solution. Often, their goals are admirable and appreciated but legislation can have unintended consequences or cause unanticipated barriers. In 2018, Missouri passed legislation limiting new prescriptions for acute pain to seven days. The seven-day limit is not an absolute but many pharmacies and insurers are treating it as such. Multiple other opioid related bills were debated this past 2019 legislative session. For instance, Missouri House Bill 491 prohibits physicians from prescribing opioids to patients less than 18 years of age unless admitted. While keeping appropriate patients opioid naïve is an admirable goal, the absolutes of this

legislation would be problematic, and fortunately, it did not pass. One since withdrawn amendment would have increased administrative burdens and possibly led to malpractice claims. A prescription drug monitoring program (PDMP) was on the docket again. The pros and cons of a PDMP are written about extensively in journals, including *Missouri Medicine*.<sup>21–23</sup> It once again passed the House, struggled to advance out of the Senate Seniors Committee, and then died on the floor of the Senate. Regarding dentistry, the Missouri Governor in 2019 signed SB 514, which limits opioid prescriptions to no more than 50 morphine equivalents a day, the equivalent of approximately 10 hydrocodone pills per day. Dentists can provide documentation should a patient require a higher dose of opioids. Dentists will not be permitted to prescribe extended release opioids. Additionally, this session legislators also passed legislation intended to increase addiction treatment. Missouri House Bill 904 prevents prior authorization or step therapy requirements when prescribing medication for addiction treatment (MAT).

### The Opioid Epidemic is Everybody's Business

While strategies promoting non-opioid analgesics following procedures by dental clinicians are important, it is worth mentioning that patients present to other providers with dental complaints as well. Toothache is the fifth most common reason for patients to go to the emergency department.<sup>24</sup> In these settings, non-opioid alternatives should be used when appropriate. Non-dental providers including emergency physicians and primary care physicians need resources to efficiently make timely referrals to dental clinicians. Additionally, they should receive education regarding non-opioid treatment best practices such as the use of NSAIDs and how to perform simple nerve blocks. Otherwise, either these prescribers will continue to rely on opioids for patient's analgesia or this will just result in a bridge to nowhere.<sup>25</sup>

### References

1. US Department of Health and Human Services. The Opioid Epidemic in the US. [Internet]. Available from: [www.hhs.gov/sites/default/files/2017-opioids-infographics.pdf](http://www.hhs.gov/sites/default/files/2017-opioids-infographics.pdf)
2. Rudd RA, Seth P, David F, Scholl L. Increases in Drug and Opioid-Involved Overdose Deaths - United States, 2010-2015. *MMWR Morb Mortal Wkly Rep* 2016;65(5051):1445–52.
3. Compton WM, Jones CM, Baldwin GT. Relationship between Nonmedical Prescription-Opioid Use and Heroin Use. *N Engl J Med* 2016;374(2):154–63.
4. McCauley JL, Hyer JM, Ramakrishnan VR, et al. Dental opioid prescribing and multiple opioid prescriptions among dental patients: Administrative data from the South Carolina prescription drug monitoring program. *J Am Dent Assoc* 2016;147(7):537–44.
5. Denisco RC, Kenna GA, O'Neil MG, et al. Prevention of prescription opioid abuse: the role of the dentist. *J Am Dent Assoc* 2011;142(7):800–10.
6. Suda KJ, Durkin MJ, Calip GS, et al. Comparison of Opioid Prescribing by Dentists in the United States and England. *JAMA Netw Open* 2019;2(5):e194303.
7. Tompach PC, Wagner CL, Sunstrum AB, Nadeau RA, Tu HK. Investigation of an Opioid Prescribing Protocol After Third Molar Extraction Procedures. *J Oral Maxillofac Surg Off J Am Assoc Oral Maxillofac Surg* 2019;77(4):705–14.
8. Steinmetz CN, Zheng C, Okunseri E, Szabo A, Okunseri C. Opioid Analgesic Prescribing Practices of Dental Professionals in the United States. *JDR Clin Transl Res* 2017;2(3):241–8.
9. Moore RA, Wiffen PJ, Derry S, Maguire T, Roy YM, Tyrrell L. Non-prescription (OTC) oral analgesics for acute pain - an overview of Cochrane reviews. *Cochrane Database Syst Rev* 2015;(11):CD010794.
10. Cooper SA, Schachtel BP, Goldman E, Gelb S, Cohn P. Ibuprofen and acetaminophen in the relief of acute pain: a randomized, double-blind, placebo-controlled study. *J Clin Pharmacol* 1989;29(11):1026–30.
11. Moore PA, Ziegler KM, Lipman RD, Aminoshariae A, Carrasco-Labra A, Mariotti A. Benefits and harms associated with analgesic medications used in the management of acute dental pain: An overview of systematic reviews. *J Am Dent Assoc* 2018;149(4):256–265.e3.
12. Moore PA, Hersh EV. Combining ibuprofen and acetaminophen for acute pain management after third-molar extractions: translating clinical research to dental practice. *J Am Dent Assoc* 2013;144(8):898–908.
13. Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain--United States, 2016. *JAMA* 2016;315(15):1624–45.
14. Dionne RA, Gordon SM, Moore PA. Prescribing Opioid Analgesics for Acute Dental Pain: Time to Change Clinical Practices in Response to Evidence and Misperceptions. *Compend Contin Educ Dent Jamesburg NJ* 1995 2016;37(6):372–378;quiz379.
15. Ducharme J, S Moore. Opioid Use Disorder Assessment Tools and Drug Screening. *Mo Medicine* 2019;
16. Marcusa DP, Mann RA, Cron DC, et al. Prescription Opioid Use among Opioid-Naive Women Undergoing Immediate Breast Reconstruction. *Plast Reconstr Surg* 2017;140(6):1081–90.
17. Brummett CM, Waljee JF, Goesling J, et al. New Persistent Opioid Use After Minor and Major Surgical Procedures in US Adults. *JAMA Surg* 2017;152(6):e170504.
18. Schroeder AR, Dehghan M, Newman TB, Bentley JP, Park KT. Association of Opioid Prescriptions From Dental Clinicians for US Adolescents and Young Adults With Subsequent Opioid Use and Abuse. *JAMA Intern Med* 2019;179(2):145–52.
19. Harbaugh CM, Nalliah RP, Hu HM, Englesbe MJ, Waljee JF, Brummett CM. Persistent Opioid Use After Wisdom Tooth Extraction. *JAMA* 2018;320(5):504–6.
20. Keith DA, Kulich RJ, Bharel M, et al. Massachusetts Dental Schools Respond to the Prescription Opioid Crisis: A Statewide Collaboration. *J Dent Educ* 2017;81(12):1388–94.
21. Page SL. Pro: The Case for a PDMP in Missouri. *Mo Med* 2017;114(5):328.
22. Lilly JD. Con: Prescription Drug Monitoring Program: Useful Tool or Government Control? *Mo Med* 2017;114(5):329.
23. Lange J, Gaddis G, Varner E, Schmidt S, Cohen R, Schwarz E. Resident Access to the St. Louis County Prescription Drug Monitoring Program: Why PDMPs Matter and How to Gain Access. *Mo Med* 2018;115(6):487–93.
24. Lewis CW, McKinney CM, Lee HH, Melbye ML, Rue TC. Visits to US emergency departments by 20- to 29-year-olds with toothache during 2001-2010. *J Am Dent Assoc* 2015;146(5):295–302.e2.
25. Carpenter CR, Lewis L, Jotte RS, Schwarz ES. A Bridge to Nowhere? Challenging Outpatient Transitions of Care for Acute Pain Patients in the Opioid Epidemic Era. *Mo Med* 2018;115(3):241–6.