

Cover Story

# Opioid prescribing practices from 2010 through 2015 among dentists in the United States

What do claims data tell us?

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ABSTRACT

**Background.** Dentists wrote 6.4% of all opioid prescriptions in the United States in 2012. The purpose of this study was to examine opioid prescription rates, dosage of opioids prescribed, type of opioid drug prescribed, and type of dental visit at which dentists prescribe opioids.

**Methods.** The authors used the 2010 through 2015 Truven Health Marketscan Research databases and the Prescription Drug Monitoring Program (PDMP) Training and Technical Assistance Center conversion data set. The authors conducted descriptive analyses for days' supply, quantity prescribed, and daily morphine milligram equivalent dose.

**Results.** The opioid prescription rate per 1,000 dental patients increased from 130.58 in 2010 to 147.44 in 2015. Approximately 68.41% of all opioids prescribed were during surgical dental visits and approximately 31.10% during nonsurgical dental visits. During nonsurgical dental visits at which dentists prescribed an opioid, most of the procedures were restorative.

**Conclusions.** Among a population of dental patients with private insurance, opioid prescribing rates in the United States increased slightly from 2010 to 2015. The largest increase was among 11-through 18-year-olds. Almost one-third of opioid prescriptions written by dentists were associated with nonsurgical dental visits.

**Practical Implications.** Use of PDMP resources and use of nonopioid analgesics could help reduce the number of opioid prescriptions in dentistry.

**Key Words.** Opioids; prescriptions; dentists.

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The United States is facing a severe opioid addiction epidemic. In 2015, approximately 12.5 million people misused prescription opioids.<sup>1</sup> Approximately 2.1 million people misused prescription opioids for the first time, and an estimated 2 million had a prescription opioid use disorder.<sup>1</sup> Opioid overdoses caused 33,091 deaths in 2015 alone.<sup>1</sup> The amount of opioids prescribed in 2010 was 782 morphine milligram equivalents (MMEs) per capita, which decreased to 640 MME per capita in 2015.<sup>2</sup> Investigators estimated the economic burden of opioid overdose, abuse, and dependence in 2013 to be \$78.5 billion from a societal perspective.<sup>3</sup>

In 1998, dentists were the top specialty prescribers of immediate-release opioids, accounting for 15.5% of all immediate-release opioid prescriptions.<sup>4</sup> However, by 2009, the amount of opioid prescriptions written by dentists decreased to 8% of all opioid prescriptions in the United States,<sup>5</sup> and by 2012, this amount further decreased to 6.4%.<sup>6</sup> More recent and detailed data are available in some states. For example, in South Carolina during 2012 and 2013, dentists accounted for only 8.9% of all opioid prescribers but prescribed 44.9% of the initial opioids dispensed to patients.<sup>7</sup> Patients younger than 21 years received 11.2% of the total amount of opioids that dentists prescribed.<sup>7</sup> Investigators conducted a study in Indiana and used 2011 data, and their results showed that access to dentists and pharmacists increased the availability of prescription opioids and that this



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increased availability was associated with higher rates of opioid drug abuse.<sup>8</sup> Investigators in 1 study found that patients did not use 54% of the opioids prescribed during dental surgery.<sup>9</sup>

Given the high prescription rates, the potential for drug misuse, and the severe ongoing opioid addiction epidemic, it is important to understand opioid prescription practices and trends in dentistry. The purpose of this study was to describe opioid prescription rates, dosage of opioids prescribed, type of opioid drug prescribed, and type of dental visit at which dentists more frequently prescribe opioids in a large sample of people who are privately insured in the United States.

## METHODS

### Data source

We used integrated dental, pharmacy, and medical claims from Truven Health Marketscan Research (Truven) databases.<sup>10</sup> These databases contain claims from people who are privately insured and are the largest convenience sample of the privately insured population. The data primarily are obtained from large employers.<sup>11</sup> The Truven databases are large enough to be nationally representative of the privately insured population.<sup>10</sup> We also used the Prescription Drug Monitoring Program (PDMP) Training and Technical Assistance Center (TTAC) conversion data set to calculate the daily MME dose.<sup>12</sup> For example, Percocet (Endo Pharmaceuticals) is a combination drug of acetaminophen and oxycodone. According to the MME conversion factor, 1 milligram of oxycodone is equivalent to 1.5 mg of morphine, so a Percocet tablet with 5 mg of oxycodone is equivalent to 7.5 mg of morphine or has a dose of 7.5 MME.

### Study sample

We selected patients younger than 65 years who had at least 1 prescription of opioids and at least 1 dental claim from January 1, 2010, through December 31, 2015, and who were enrolled simultaneously in a medical and dental plan. [eTable 1](#)<sup>13,14</sup> (available online at the end of this article) lists the opioid drugs we considered for this study and their MME conversion factors. We compiled the list of opioid drugs on the basis of the PDMP TTAC list<sup>13</sup> and the Centers for Medicare & Medicaid Services list.<sup>14</sup> [Figures 1](#) and [2](#) outline the sample selection criteria. The sample population consisted of 1,558,446 opioid prescription claims from 1,135,344 patients.

### Measures

We defined an opioid prescription as dental related if it occurred within 3 days of a dental visit and there was no inpatient or outpatient claim within those same 3 days. We calculated the number of dental opioid prescriptions per 1,000 dental visits as the total number of dental opioid prescriptions divided by the total number of dental visits among patients enrolled in both a medical and dental plan, and then we multiplied it by 1,000. We further calculated the number of dental opioid prescriptions per 1,000 dental patients according to age group as the total number of dental opioid prescriptions in an age group divided by the total number of dental patients in that age group enrolled in both a medical and dental plan, and then we multiplied it by 1,000.

The Truven database reports the number of days of drug therapy covered by the prescription (days' supply), the number of units of drug dispensed (quantity), and the strength of the drug (strength). We obtained the MME dose by merging the Truven data sets with the PDMP TTAC conversion data set. We calculated the daily dose as the total strength of number of drug units per day (daily dose = quantity × strength / days' supply). We calculated the daily MME dose as the MME conversion factor multiplied by the daily dose. We calculated the average number of days' supply, quantity prescribed, and daily MME dose according to age group. We also identified the opioid drugs dentists most frequently prescribed. We used the sample population from [Figure 1](#) to calculate the measures described.

We categorized each dental visit at which a dentist prescribed opioids as surgical, nonsurgical, presurgical, or postsurgical. We identified surgical procedures on the basis of the American Dental Association Current Dental Terminology codebook<sup>15-19</sup> and expert opinion from researchers at academic institutions. [eTable 2](#) (available online at the end of this article) includes the list of all procedures that we considered surgical. If a dental visit had any of the procedure codes that we considered surgical services, we considered that dental visit as a surgical visit for this study. If a dental visit had none of the procedure codes that we considered surgical services, we considered that dental visit as a nonsurgical visit. It is possible that patients who received an opioid prescription

## ABBREVIATION KEY

<b>NDC:</b>	National Drug Code.
<b>NSAID:</b>	Nonsteroidal anti-inflammatory drug.
<b>PDMP:</b>	Prescription Drug Monitoring Program.
<b>Truven:</b>	Truven Health Marketscan Research.
<b>TTAC:</b>	Training and Technical Assistance Center.

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