

## Original Contributions

# Multiple opioid prescriptions among privately insured dental patients in the United States

Evidence from claims data



Supplemental material  
is available online.

Niodita Gupta, MD, MPH, PhD; Marko Vujcic, PhD; Andrew Blatz, MS

## ABSTRACT

**Background.** Multiple or high dosage opioid prescriptions increase the risk of experiencing drug misuse and overdose. The authors examine index (first) and follow-up opioid prescriptions for 1 year among privately insured dental patients in the United States from 2010 through 2015.

**Methods.** The authors used the 2010 through 2015 Truven Health MarketScan Research databases and the Prescription Drug Monitoring Program Training Technical Assistance Center conversion data set. The authors analyzed index prescriptions, repeat prescriptions over 1 year, same-day multiple prescriptions, and concurrent prescriptions among dental patients. Descriptive analyses were conducted for days' supply, quantity of opioids, daily morphine milligram equivalent (MME) dose, and total MME dose.

**Results.** Approximately 17.27% of all index prescriptions were dental related. The percentage of dental-related index prescriptions for age groups 11 through 18 years and 19 through 25 years was 23.51% and 23.41%, respectively. Approximately 80.87% of repeat prescriptions within 30 days of dental-related index prescriptions were dental related. In 39.07% of dental-related same-day multiple prescription incidents, the daily dose was greater than or equal to 50 MME. Approximately 58.28% of dental-related concurrent prescriptions were dispensed when an existing dental-related opioid prescription was available.

**Conclusions.** Dental-related index prescriptions were highest for the age groups 11 through 18 years and 19 through 25 years. The frequency of dental-related repeat prescriptions was the highest within 30 days of a dental-related index prescription.

**Practical Implications.** Low dosages of opioids and the use of prescription drug monitoring programs before prescribing opioids may reduce the potential for drug misuse or overdose.

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

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In 2016, the total number of opioid prescriptions in the United States was approximately 214.9 million,<sup>1</sup> with an annual opioid prescribing rate of 66.5 prescriptions per 100 people.<sup>2</sup> In 2015, approximately 12.5 million people misused prescription opioids, and approximately 2 million people had prescription opioid use disorder.<sup>3</sup> Because of the nature of opioid drugs, opioid prescriptions may create dependence and lead to nonmedical usage, resulting in overdose or death.<sup>4</sup> In Massachusetts, approximately two-thirds of patients who died of opioid overdose in 2013 and 2014 had received an opioid prescription between 2011 and 2014.<sup>5</sup> Because of the high rates of opioid abuse, overdose, and death, the opioid crisis in the United States was declared a public health emergency in 2017.<sup>6</sup>

In 2012, the latest year for which data are available, dentists prescribed 18.5 million prescriptions, accounting for 6.4% of all opioids prescribed in the United States.<sup>7</sup> Dental visits are often young adults' first exposure to opioids,<sup>8,9</sup> and this age group is the most likely to abuse prescription opioids.<sup>10</sup> Researchers of previous studies have reported that overlapping prescriptions, multiple pharmacies, and multiple providers are risk factors of experiencing prescription opioid abuse and overdose.<sup>11-13</sup> Higher doses can increase the risk of experiencing continued opioid use<sup>14</sup> and overdose.<sup>15</sup> Given the severity of the opioid crisis, it is important to examine multiple prescribing

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practices by dentists and interactions between dentist and physician prescribing (that is, prescriptions received by the shared patients from dentists and physicians). For example, in South Carolina, approximately 21% of dental opioid prescriptions were given within 30 days of a pre-existing opioid prescription.<sup>16</sup> However, there is little empirical evidence regarding patients who receive multiple opioid prescriptions from dentists and physicians.

We examine index (first) and follow-up opioid prescribing patterns over the course of a year among a large population of privately insured people in the United States with a dental visit.

## METHODS

### Data source

We used the Truven Health MarketScan Research databases, which contain integrated dental, medical, and pharmacy claims for privately insured people.<sup>17</sup> These databases are the largest convenience sample of the privately insured population<sup>18</sup> and are large enough to be nationally representative of the privately insured population.<sup>17</sup> We merged the Truven databases with the Prescription Drug Monitoring Program (PDMP) Training and Technical Assistance Center (TTAC) conversion data set to obtain the daily morphine milligram equivalent (MME) dose for opioid drugs.<sup>19</sup> For example, 1 milligram of oxycodone is equal to 1.5 mg of morphine. A Percocet (Endo Pharmaceuticals) tablet, which is a combination drug of acetaminophen and 5 mg of oxycodone, is thus equal to 7.5 mg of morphine or 7.5 MME.

### Study sample

Patients younger than 65 years who had at least 1 prescription for opioids from either a dentist or a physician and at least 1 dental visit from January 1, 2010, through December 31, 2015, were included in the study sample. The list of opioid drugs considered in this study is shown in the [eTable](#) ([eTable](#), available online at the end of this article). This list was created with information from PDMP TTAC<sup>20</sup> and the Centers for Medicare and Medicaid Services.<sup>21</sup> Furthermore, these patients were required to be enrolled simultaneously in a medical and dental plan. We identified their first opioid prescription (that is, their index prescription) from 2010 through 2015 and limited our sample to those patients who had a minimum of 365 days of continuous enrollment before and after the date of their index prescription. The prescription follow-up period was 365 days from their index prescription. Because we were only interested in patients who received multiple opioid prescriptions, the patients who had only 1 opioid prescription during the study period were excluded. [Figure 1](#) summarizes the sample selection criteria in detail. Our sample population consisted of 4,542,385 opioid prescription claims from 863,422 patients. [Figure 2](#) illustrates the amount of repeat opioid prescriptions during the 1-year longitudinal follow-up period.

### Measures

Our criteria of 365 continuous days of enrollment before the index prescription helped ensure that there were no other opioid prescriptions received by the patient during the preceding year. Hence, it was assumed that the patients in our sample were opioid naive, meaning they had not been exposed to prescription opioids before the index prescription. The Truven databases cannot identify if the prescription dispensed was written by a dentist (dental visit related) or a physician (outpatient or inpatient visit related). Hence, we identified the source of the prescription by using the outpatient, inpatient, and dental visit dates. If the prescription was within 3 days of an outpatient visit and there were no other dental or inpatient visits during these 3 days, the prescription source was identified to be outpatient related. The prescription source was similarly identified as inpatient or dental related. We analyzed the proportion of index prescriptions by their source and by patient age group.

The Truven databases have information on number of days' supply of medication dispensed (days), strength of the drug (strength), and number of units of medication dispensed (quantity), and the PDMP TTAC conversion data set has information on the MME conversion factor to obtain MME for each opioid drug. We calculated the daily dose as quantity multiplied by strength divided by day and the daily MME dose as daily dose multiplied by the MME conversion factor. We also calculated the total MME dose available to the patient through each prescription (total MME dose) as daily MME dose multiplied by the number of days' supply. We examined the number of days'

## ABBREVIATION KEY

- MME:** Morphine milligram equivalent.
- NDC:** National Drug Code.
- PDMP:** Prescription drug monitoring program.
- TTAC:** Training Technical Assistance Center.

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