Opioid Prescribing After Surgical Extraction of Teeth in Medicaid Patients, 2000-2010

Opioid abuse has reached epidemic proportions in the United States and often begins with a prescription for a pain medication. Dentists are among the leading prescribers of opioid analgesics, and surgical tooth extraction is one of the most frequently performed dental procedures. Surveys suggest that dental practitioners commonly prescribe opioids following this procedure, despite evidence that a combination of nonsteroidal medications and acetaminophen may provide more effective analgesia for postextraction pain. Little information is available on nationwide patterns of opioid prescribing following tooth extraction.

Methods | The use of the Medicaid database for research was approved by Partners’ institutional review board and the need for informed consent was waived. We collected data from the Medicaid Analytic eXtract—a national database of deidentified health claims drawn from Medicaid transactions for the years 2000-2010, which were combined for this analysis. All patients who underwent surgical dental extraction were included, identified by Current Dental Terminology codes. The cohort was restricted to patients with continuous Medicaid coverage from 90 days before through 7 days following extraction, allowing for up to a 7-day lapse in coverage. We determined the frequency of opioid prescriptions filled within 7 days of extraction and the nature and amount of opioids dispensed. Patients were stratified by age, sex, and type of extraction. Patients who filled an opioid prescription in the 90 days prior to extraction were excluded.

The opioids studied included codeine, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, pentazocine, propoxyphene, tramadol, and fentanyl. To examine the amount of opioids dispensed, the dose prescribed was converted into morphine equivalents. Patients younger than 18 years were excluded from the analysis of quantity dispensed, as pediatric dosing is often weight-based. Patients receiving nontablet or noncapsule formulations (eg, liquids) were also excluded. All analyses were performed in SAS (SAS Institute), version 9.4.

Results | There were 2,757,273 patients in the cohort. The mean age was 24.9 years (SD, 13.3) and 64% were women. Within 7 days of extraction, 1,167,474 patients (42%) filled a prescription for an opioid medication. The most commonly dispensed opioid was hydrocodone (78% of all prescriptions), followed by oxycodone (15.4%), propoxyphene (3.5%), and codeine (1.6%). Patients aged 14 to 17 years had the highest proportion of filled opioid prescriptions (61%), followed by patients aged 18 to 24 years (52%) (Table 1).

The median number of milligrams of morphine equivalents dispensed was 120 (interquartile range [IQR], 90-150; 10th-90th percentile range, 75-225) (Table 2), representing 24 5-mg tablets of hydrocodone (IQR, 18-30) or 16 5-mg tablets of oxycodone (IQR, 12-20). The median number of morphine equivalents dispensed was highest for patients who underwent more invasive procedures (extraction of impacted teeth rather than nonimpacted teeth).

Discussion | In this large cohort of Medicaid patients from throughout the United States, prescriptions for opioids were filled by 42% of patients within 7 days following surgical tooth extraction. There was great variability in the amount of opioids dispensed for a given procedure, with an approximately 3-fold difference between the 10th and 90th percentile in the
Table 2. Amount of Oral Morphine Equivalents Dispensed Following Tooth Extraction by Procedure Type Among Medicaid Patients (N = 693702)\textsuperscript{a}\textsuperscript{b}

<table>
<thead>
<tr>
<th>Procedure Type</th>
<th>Dispensed Morphine Equivalents, mg</th>
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<tr>
<td>Overall cohort</td>
<td>120 (90-150) [75-225]</td>
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\textsuperscript{a} Data were from the Medicaid Analytic eXtract.\textsuperscript{1}


oral morphine equivalents prescribed. Although a limited supply of opioids may be required for some patients following tooth extraction, these data suggest that disproportionately large amounts of opioids are frequently prescribed given the expected intensity and duration of postextraction pain, particularly as nonopioid analgesics may be more effective in this setting.\textsuperscript{3}

This study has limitations. Findings based on data from Medicaid claims may not generalize to a commercially insured population. Also, the final year of the study was 2010, and it is possible that dental prescribing practices have changed somewhat since that time.

This common dental procedure may represent an important area of excessive opioid prescribing in the United States. As the nation implements programs to reduce excessive prescribing of opioid medications, it will be important to include dental care in these approaches.

Opioids Prescribed After Low-Risk Surgical Procedures in the United States, 2004-2012

Adverse events related to opioid analgesics are common.\textsuperscript{1,2} Although opioids represent a component of pain treatment regimens following low-risk surgery,\textsuperscript{3,4} few data exist regarding patterns of postoperative opioid prescribing over time. We assessed trends in the amount of hydrocodone/acetaminophen and oxycodone/acetaminophen prescribed, 2 opioids commonly used for postoperative pain management.

Methods | The University of Pennsylvania determined this research was exempt from review. We identified patients from a clininformatics data mart database (OptumInsight),\textsuperscript{5} including health care encounters of approximately 14 million primarily commercially insured patients. Adults in the database tend to be younger and from the South compared with the US population. The database includes pharmacy and medical claims with data on services and procedures. The sample included opioid-naïve adults (age, 18-64 y) who underwent 1 or more of 4 low-risk surgical procedures in 2004, 2008, or 2012: carpal tunnel release, laparoscopic cholecystectomy, inguinal hernia repair, or knee arthroscopy. Patients who filled any opioid prescription in the 6 months before surgery were excluded. We assessed the proportion of patients who filled any opioid prescription (and specifically hydrocodone/acetaminophen or oxycodone/acetaminophen) in the study period.

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