

A Healthcare Claims Database Analysis to Estimate the Prevalence of Chronic Opioid Use by Adult Patients in the United States

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INTRODUCTION

- According to a review by Verhaak et al.¹ studies have shown that the prevalence of chronic pain in the adult population ranges from 2% to 40%, with a median point prevalence of 15%. Chronic pain was reported by 17% of men and 20% of women in a large Australian study,² and a recent European survey among more than 46,000 respondents identified 19% with chronic pain.³
- A survey conducted for the American Pain Society concluded that 9% of the adult population in the United States had moderate to severe, noncancer-related, chronic pain.⁴
- Because there are many types and causes of chronic pain, a wide range of methods and medications exist to treat it, from behavioral changes to opioids.⁵
- The Federation of State Medical Boards' model guidelines encourage judicious opioid use with proper documentation.⁶
- "Daily-basis" patients may be described as those patients taking opioids for more than 90 days.⁷
- Using a telephone survey, Parsells Kelly et al estimated that the prevalence of regular opioid use (at least 5 days per week for at least 4 weeks) was 2% in the United States, resulting in a projected estimate of 4.3 million adults taking opioids regularly.⁸
- Among those patients taking opioids on a daily basis, a proportion will meet the definition of opioid tolerance, as defined in the prescribing information for fentanyl citrate and fentanyl buccal tablet.^{9,10}
 - Patients (≥18 years old) considered opioid tolerant are those who are taking around-the-clock medicine consisting of at least 60 mg of oral morphine daily, at least 25 µg of transdermal fentanyl/hour, at least 30 mg of oxycodone daily, at least 8 mg of oral hydromorphone daily, or an equianalgesic dose of another opioid daily for ≥1 week.^{9,10}

OBJECTIVE

- The objective of this analysis was to estimate the prevalence of chronic opioid use by adult patients in the United States.

METHODS

- This retrospective database analysis used Wolters Kluwer Health's Source Lx[®] data repository, which contains healthcare claims and prescription data from physicians' practices, pharmacies, and hospitals covering the entire United States, along with outpatient prescription drug history for 172 million patients covering multiple years.
- The total sample for this analysis (i.e. the denominator) included all patients ≥18 years old with a prescription in 2007 (i.e. from January 1 to December 31, 2007) in the claims database. The following subsets were identified from the total sample:
 - Patients who had a prescription for opioids
 - Patients who were taking opioids on a daily basis for >90 days
 - Patients whose daily consumption of opioids for >90 days was at least 60 mg of oral morphine, or the equivalent; **Table 1**.

Table 1. Dose Threshold for Opioid Tolerance

Generic Name	Threshold (mg/day)
Codeine	260
Fentanyl	0.6
Hydrocodone	60
Hydromorphone	8
Levorphanol	4
Meperidine	900
Methadone	20
Oxycodone	30
Oxymorphone	20
Propoxyphene	200
Tramadol	200
Morphine	20 (IV), 60 (oral)

- The number of US patients using opioids was projected using the proportions that were estimated from the claims database. The projections were based on the assumption that approximately 166.5 to 191.25 million (74%¹¹ to 85%¹² of 225 million¹³) persons in the US adult population had at least one prescription for any medication processed in the time periods examined.

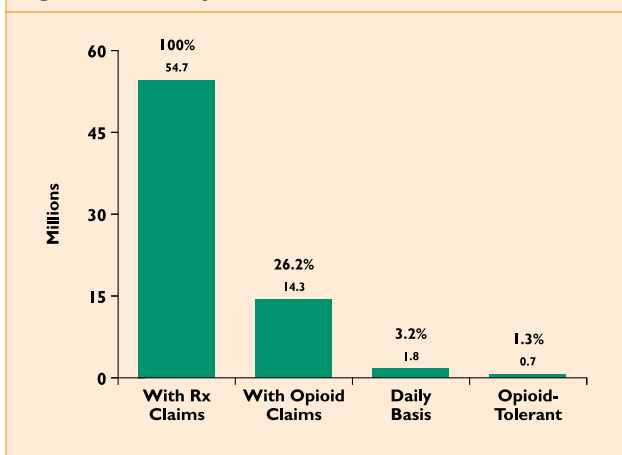
RESULTS

- The numbers of patients identified at each stage are shown in **Table 2** and **Figure 1**.

Table 2. Patients With Prescriptions for Opioids by Age, Type of Opioid, and Extent of Opioid Utilization

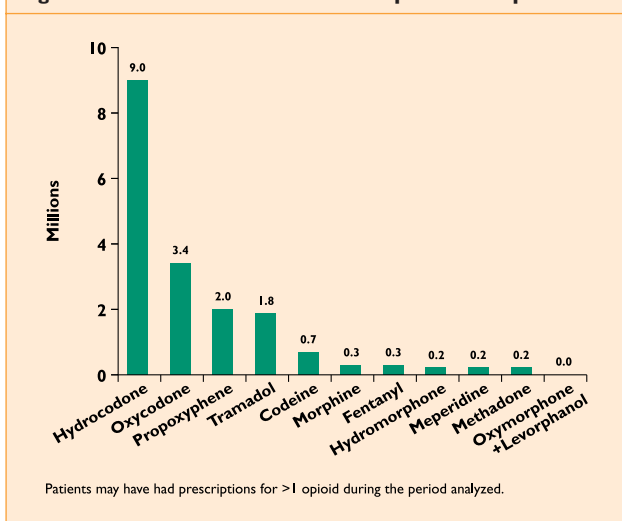
Generic Group	Total Patients	Patients ≥18 Years Old	Daily-Basis Patients	Opioid-Tolerant Patients
Unique patient count	15,182,465	14,297,548	1,774,866	737,099
Codeine	876,632	743,730	18,268	1,869
Fentanyl	289,609	284,326	107,342	4,231
Hydrocodone	9,543,382	8,990,329	871,637	68,650
Hydromorphone	171,259	167,740	16,857	14,852
Levorphanol	760	751	274	262
Meperidine	163,343	150,266	3,625	32
Methadone	157,185	154,010	75,113	64,425
Morphine	297,415	291,004	95,438	88,434
Oxycodone	3,499,673	3,368,045	398,977	260,563
Oxymorphone	16,784	16,555	3,839	3,222
Propoxyphene	2,104,853	2,038,425	174,551	159,628
Tramadol	1,874,970	1,820,150	271,494	134,380

Figure 1. Data Sample Construction of Patients ≥18 Years Old



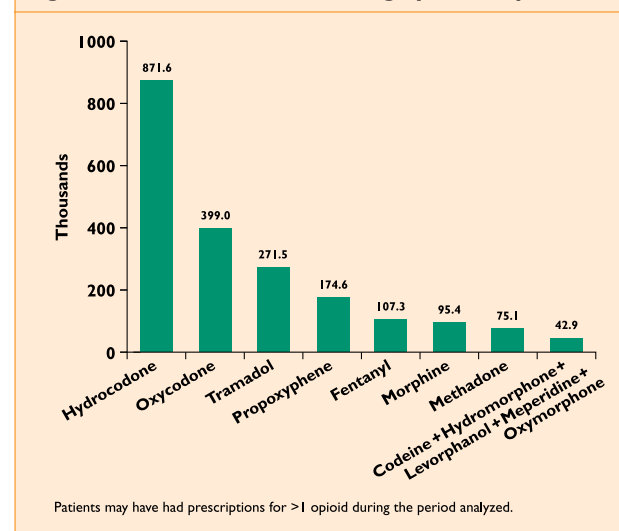
- The sample included 54,667,670 (54.7 million) patients ≥18 years old who received a prescription for any medication, according to the claims database.
- 14,297,548 (14.3 million) of these patients had opioid prescriptions (26.2% of the sample). The most common opioids among those patients are shown in **Figure 2**.

Figure 2. Patients ≥18 Years Old With Opioid Prescriptions



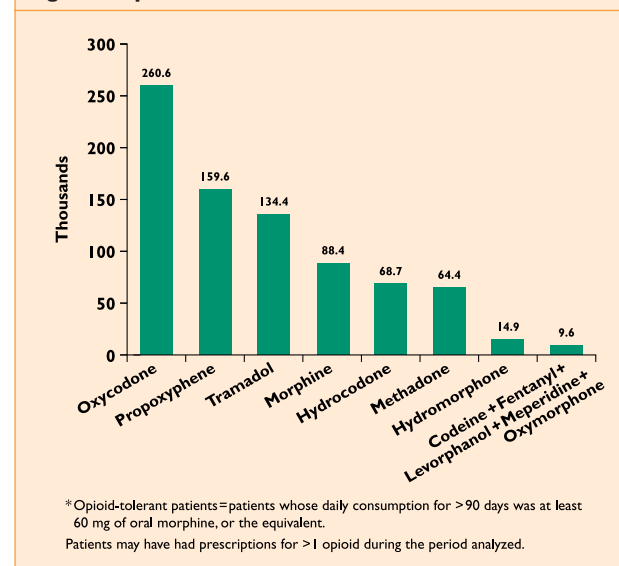
- 1,774,886 (1.8 million) "daily-basis" patients were identified (3.2% of the sample), with the most common opioids shown in **Figure 3**.
- 737,099 patients met the definition of opioid tolerance (1.3% of the sample), with the most common opioids shown in **Figure 4**.
- Hydrocodone was the most frequently prescribed opioid overall and among the "daily-basis" patients, and the fifth most commonly prescribed among opioid-tolerant patients.

Figure 3. Patients ≥18 Years Old Taking Opioids Daily



Patients may have had prescriptions for >1 opioid during the period analyzed.

Figure 4. Opioid-Tolerant Patients* ≥18 Years Old



* Opioid-tolerant patients=patients whose daily consumption for >90 days was at least 60 mg of oral morphine, or the equivalent. Patients may have had prescriptions for >1 opioid during the period analyzed.

- Based on the estimates of the numbers of US adults (≥18 years old) using prescription drugs, it was estimated that there were:
 - ~43.6 to 50.1 million patients with opioid prescriptions
 - ~5.4 to 6.2 million patients taking opioids daily
 - ~2.2 to 2.6 million patients who could be classified as opioid-tolerant.

LIMITATIONS

- Analysis was based on dispensed prescriptions; the following were not accounted for:
 - Compliance
 - Medications on hand prior to the study period
 - Medications remaining at the conclusion of the study period.
- Medication selection and utilization may have been affected by co-pays, plan-design, and formularies.
- The Wolters Kluwer Health database used in this study represents US persons with medical and prescription drug insurance; it does not account for persons without medical or prescription drug coverage.

CONCLUSIONS

- Analysis of a large healthcare claims database provided a projected estimate of ~2.2 to 2.6 million opioid-tolerant adult patients in the United States.
- These findings are generally consistent with other published research.⁸
- The overall profile of the opioid medications most commonly prescribed within the subgroup of opioid-tolerant patients differed from that in the overall group of patients with at least one prescription for opioids.

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Acknowledgments

Joseph W. Markmann, Wolters Kluwer Health, Philadelphia, PA, and James E. Smeeding, The JeSTARx Group, Dallas, TX.

Sponsored by Cephalon, Inc., Frazer, PA, USA.
 Presented at the 25th Annual Meeting of the American Academy of Pain Medicine, Honolulu, HI, January 28–31, 2009.