



Published in final edited form as:

Am J Prev Med. 2022 July ; 63(1): e35–e37. doi:10.1016/j.amepre.2022.01.029.

Prescription History Among Individuals Dispensed Opioid Prescriptions, 2017–2020

Andrea E. Strahan, PhD,

Nisha Nataraj, PhD,

Gery P. Guy Jr, PhD,

Jan L. Losby, PhD,

Deborah Dowell, MD

Division of Overdose Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia

INTRODUCTION

In response to the opioid overdose crisis, the Centers for Disease Control and Prevention (CDC) released the Guideline for Prescribing Opioids for Chronic Pain (CDC Guideline) in 2016, which included recommendations to initiate opioids carefully and only when expected benefits outweigh risks.¹ Although opioid prescriptions have decreased in recent years,² an estimated 9.4 million people misused opioids in 2020.³ Little is known about how prescriptions dispensed to opioid-naïve individuals (i.e., those new to opioid therapy) have changed in recent years; previous research focused on commercially insured individuals from 2012 to 2017.⁴ Understanding these patterns is important given the association between initial opioid-prescribing characteristics, such as prescription duration, and the likelihood of long-term use.⁵ This study examines previous opioid prescription history and initial prescription characteristics among individuals with dispensed opioid prescriptions from 2017 through 2020 using a large all-payer pharmaceutical claims database.

METHODS

Opioid prescriptions dispensed by retail pharmacies to adults (aged ≥ 18 years) with oral or transdermal administration routes were identified using the IQVIA Longitudinal Prescription database, which captures 92% of retail pharmacy prescriptions. Exclusion criteria included cold and cough products; buprenorphine used to treat opioid use disorder; and individuals with an opioid prescription from hematology, oncology, or palliative care specialties dispensed during the study period or a 365-day lookback period before their

Address correspondence to: Andrea E. Strahan, PhD, Division of Overdose Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, 4770 Buford Highway, S106-8, Atlanta GA 30341. astrahan@cdc.gov.

CREDIT AUTHOR STATEMENT

Andrea E. Strahan: Conceptualization, Data curation, Methodology, Writing - original draft. Nisha Nataraj: Conceptualization, Methodology, Writing - review and editing. Gery P. Guy Jr: Conceptualization, Methodology, Writing - review and editing. Deborah Dowell: Conceptualization, Methodology, Writing - review and editing. Jan L. Losby: Conceptualization, Supervision, Writing - review and editing.

first prescription. Dosage was calculated as daily oral morphine milligram equivalents.⁶ Consistent with previous literature, patients without a dispensed opioid prescription in the previous 365 days were considered opioid-naive; other patients were considered to have a previous opioid prescription history.⁷ Types of opioid dispensing included high dose (50 daily morphine milligram equivalents), extended-release/long acting, and >7 days duration on the basis of CDC Guideline recommendations.¹ Temporal trends from 2017 to 2020 in the prescription history of individuals dispensed an opioid prescription and prescription types among those dispensed an initial opioid prescription were analyzed using logistic regression.⁸ Stata, version 14.2, was used for all analyses. The CDC determined human subject regulations and IRB approval were not applicable because deidentified secondary data were used.

RESULTS

From 2017 to 2020, the absolute change in the number of individuals in the Longitudinal Prescription database dispensed 1 opioid prescription decreased among all groups but with a smaller relative decrease among opioid-naive individuals (-21.54%) versus those with a previous opioid prescription history (-31.67%) (Table 1). In 2017, a total of 62.50% of individuals dispensed an opioid prescription were opioid-naive; 65.68% were in 2020. The likelihood of individuals with dispensed prescriptions being opioid-naive increased from 2017 to 2020 ($p<0.001$). Among opioid-naive individuals receiving an initial prescription, the proportion of the following prescription types decreased from 2017 to 2020: high dose (from 18.65% to 9.90%), extended-release/long acting (from 0.63% to 0.40%), and >7 days in duration (from 20.60% to 8.51%). Tests for temporal trends found that the likelihood of receiving each type of initial prescription decreased from 2017 to 2020 ($p<0.001$).

DISCUSSION

Although fewer opioid-naive individuals were dispensed opioid prescriptions in 2020 than in 2017, most individuals dispensed retail opioid prescriptions in 2020 continue to be opioid-naive. Recent research found that prescriptions for opioid-naive patients decreased briefly when the coronavirus disease 2019 (COVID-19) pandemic disrupted medical services, then rebounded in 2020.⁵ It remains to be seen whether observed reductions will be sustained. Prescribers may have written more guideline-concordant¹ initial prescriptions in terms of type, dosage, and duration in 2020 than in 2017. However, almost 1 in 10 initial prescriptions dispensed in 2020 were high dose, indicating a potential area to address high-risk prescribing.

Limitations

Study limitations include lack of sufficient clinical information to assess the appropriateness of dispensed opioids, the inability to differentiate between prescriptions dispensed for acute and chronic pain treatment, and the inability to determine whether decreases among individuals with previous opioid prescription histories indicated unsafe tapering or discontinuation among individuals on long-term opioid therapy. Finally, the data are not weighted to be nationally representative but nonetheless allow for examination of a large all-payer sample across recent years.

CONCLUSIONS

This study provides important insights into how individuals have initiated opioids in recent years. Although most opioid prescriptions continued to be dispensed to opioid-naive individuals in 2020, these findings should be taken in the context that prescriptions to all patient groups continue to decrease and may be increasingly guideline concordant. Future research might continue to examine opioid-prescribing patterns and whether patterns are consistent with published guidance.^{1,9}

ACKNOWLEDGMENTS

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

No financial disclosures were reported by the authors of this article.

REFERENCES

1. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain - United States, 2016 [published correction appears in MMWR Recomm Rep. 2016;65(11):295]. MMWR Recomm Rep. 2016;65(1):1–49. 10.15585/mmwr.rr6501e1.
2. Centers for Disease Control and Prevention. 2019 Annual surveillance report of drug-related risks and outcomes - United States surveillance special report. Atlanta, GA: Centers for Disease Control and Prevention, HHS. <https://www.cdc.gov/drugoverdose/pdf/pubs/2019-cdc-drug-surveillance-report.pdf>. Published November 1, 2019. Accessed April 5, 2021.
3. Substance Abuse and Mental Health Services Administration. Key substance use and mental health indicators in the United States: results from the 2020 National Survey on Drug Use and Health (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. <https://www.samhsa.gov/data/sites/default/files/reports/rpt35325/NSDUHFFRPDFWHTMLFiles2020/2020NSDUHFFR1PDFW102121.pdf>. Published October 2021. Accessed December 20, 2021.
4. Zhu W, Chernew ME, Sherry TB, Maestas N. Initial opioid prescriptions among U.S. commercially insured patients, 2012–2017. N Engl J Med. 2019;380(11):1043–1052. 10.1056/NEJMs1807069. [PubMed: 30865798]
5. Shah A, Hayes CJ, Martin BC. Characteristics of initial prescription episodes and likelihood of long-term opioid use - United States, 2006–2015. MMWR Morb Mortal Wkly Rep. 2017;66(10):265–269. 10.15585/mmwr.mm6610a1. [PubMed: 28301454]
6. CDC file of national drug codes for selected benzodiazepines, muscle relaxants, stimulants, opioid analgesics, and linked oral morphine milligram equivalent conversion factors for opioids. Centers for Disease Control and Prevention. <https://www.cdc.gov/opioids/data-resources/index.html>. Updated March 24, 2021. Accessed April 12, 2021.
7. Currie JM, Schnell MK, Schwandt H, Zhang J. Prescribing of opioid analgesics and buprenorphine for opioid use disorder during the COVID-19 pandemic. JAMA Netw Open. 2021;4(4):e216147. 10.1001/jamanetworkopen.2021.6147. [PubMed: 33856474]
8. Ingram DD, Malec DJ, Makuc DM, et al. National Center for Health Statistics guidelines for analysis of trends. Vital Health Stat 2. 2018;179:1–71. https://www.cdc.gov/nchs/data/series/sr_02/sr02_179.pdf. Accessed March 31, 2022.
9. HHS. HHS guide for clinicians on the appropriate dosage reduction or discontinuation of long-term opioid analgesics. Washington, DC: HHS. https://www.hhs.gov/opioids/sites/default/files/2019-10/Dosage_Reduction_Discontinuation.pdf. Published October 2019. Accessed February 16, 2021.

Table 1. Individuals (Age 18 Years) With a Dispensed Opioid Prescription by Opioid Prescription History and Initial Prescription Characteristics, 2017–2020

Previous prescription history	Year				% Change 2017–2020
	2017	2018	2019	2020	
Individuals with a previous prescription history, <i>n</i> (%)	16,496,995 (37.50)	14,636,050 (37.09)	12,759,467 (35.06)	11,272,404 (34.32)	-31.67 (-8.48) ^a
Opioid-naive individuals, <i>n</i> (%)	27,494,162 (62.50)	24,826,591 (62.91)	23,636,403 (64.94)	21,571,789 (65.68)	-21.54 (-5.09) ^a
Individuals with a high dose (≥ 50 MME per day) initial prescription, <i>n</i> (%)	5,122,024 (18.65)	3,736,239 (15.06)	2,677,983 (11.34)	2,133,991 (9.90)	-58.34 (-46.92) ^a
Individuals with an extended-release/long-acting initial prescription, <i>n</i> (%)	173,731 (0.63)	123,718 (0.50)	101,725 (0.43)	86,493 (0.40)	-50.21 (-36.51) ^a
Individuals with an initial prescription for >7 days duration, <i>n</i> (%)	5,662,600 (20.60)	3,640,722 (14.66)	2,059,819 (8.71)	1,836,147 (8.51)	-67.57 (-58.69) ^a

Source: Authors' analysis of IQVIA Longitudinal Prescription database (2016–2020).

Note: Boldface indicates statistical significance (*p*<0.001).

Opioid-naive individuals were those with no dispensed opioid prescription in the previous 365 days; otherwise, individuals were considered to have a previous opioid prescription history. The 2016 IQVIA Longitudinal Prescription data were used to determine prescription history for individuals with prescriptions dispensed in 2017. The percentages of individuals with a high dose, extended-release/long-acting, or >7 days duration initial prescription are among all opioid-naive individuals in that year. MME, morphine milligram equivalent.

^a Logistic regression was used to determine the likelihood that an individual dispensed an opioid prescription did or did not have a previous opioid prescription history as well as the likelihood that an individual dispensed an initial prescription received one that was high dose, extended-release/long acting, or >7 days duration, from 2017 to 2020.

^b Prescriptions without oral MME conversion factors were excluded from the analysis of individuals receiving high dose initial prescriptions. When these prescriptions were excluded, there were 27,470,289 opioid-naive individuals in 2017; 24,809,142 in 2018; 23,619,611 in 2019; and 21,559,854 in 2020.

MME, morphine milligram equivalent.