

# Chronic Opioid Prescribing in Primary Care: Factors and Perspectives

Sebastian T. Tong, MD, MPH

Camille J. Hochheimer

E. Marshall Brooks, PhD

Roy T. Sabo, PhD

Vivian Jiang, MD

Teresa Day

Julia S. Rozman

Paulette Lail Kashiri, MPH

Alex H. Krist, MD, MPH

Virginia Commonwealth University,  
Richmond, Virginia

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## ABSTRACT

**BACKGROUND** Primary care clinicians write 45% of all opioid prescriptions in the United States, but little is known about the characteristics of patients who receive them and the clinicians who prescribe opioids in primary care settings. Our study aimed to describe the patient and clinician characteristics and clinicians' perspectives of chronic opioid prescribing in primary care.

**METHODS** Using a mixed methods approach, we completed an analysis of 2016 electronic health records from 21 primary care practices to identify patients who had received chronic opioids, which we defined as in receipt of an opioid prescription for at least 3 consecutive months. We compared those receiving chronic opioids with those not in terms of their demographics, prescribing clinician characteristics, and risk factors for opioid-related harms, as identified by the Centers for Disease Control and Prevention Guideline on Opioid Prescribing for Chronic Pain. We then interviewed 16 primary care clinicians about their perspectives on chronic opioid prescribing.

**RESULTS** Of 84,029 patients, 1.1% (902/84,929) received chronic opioid prescriptions. Characteristics associated with being prescribed chronic opioids include being female, being of black or African American race, and having risks for opioid-related harms, such as mental health diagnoses, substance use disorder, and concurrent benzodiazepine use. Clinicians report multiple difficulties in weaning patients from chronic opioids, including medical contraindications of nonopioid alternatives and difficulty justifying weaning by stable long-term patients.

**CONCLUSION** Although patients prescribed opioids in primary care have higher risks of opioid-related harms, clinicians report multiple barriers in deprescribing chronic opioids. Future studies should examine strategies to mitigate these harms and engage patients in shared decision making about their chronic opioid use.

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## INTRODUCTION

Drug overdose deaths involving opioids continue to rise in the United States, with 42,249 people fatally overdosing in 2016, a 27.9% increase from 2015.<sup>1</sup> Although illicit substances such as heroin and illicitly manufactured fentanyl contribute significantly to the problem, prescribed opioids are involved in approximately 40% of opioid overdose deaths.<sup>2</sup> The National Survey on Drug Use and Health estimated that 1.8 million people had a prescription pain reliever use disorder and 11.5 million misused prescription pain relievers in 2016.<sup>3</sup> An estimated 215 million opioid prescriptions were dispensed by retail pharmacies in 2016, reaching a rate of 66.5 dispensed opioid prescriptions per 100 persons in the United States.<sup>4</sup> Of these opioid prescriptions, 45% were written by primary care clinicians.<sup>5,6</sup>

Despite high rates of opioid prescribing, the majority of primary care clinicians receive little or no training during medical school and residency in prescribing opioids or managing substance use disorders.<sup>7-9</sup> As a result, few primary care clinicians feel prepared to screen for, diagnose, and treat prescription medication misuse.<sup>10-14</sup> In recent years, a growing number of

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### CORRESPONDING AUTHOR

Sebastian T. Tong, MD, MPH  
Box 980101  
Richmond, VA, 23298  
sebastian.tc.tong@gmail.com

resources have been released to assist clinicians with managing opioid prescribing.<sup>15-18</sup> In 2016, the Centers for Disease Control and Prevention (CDC) released its *Guideline for Prescribing Opioids for Chronic Pain*, which includes recommendations on assessing risk factors for opioid-related harms when prescribing opioids.<sup>15</sup> Despite these guidelines, there remains substantial variation in the practice of prescribing opioids.<sup>19-21</sup>

Although other studies have examined large-scale variations,<sup>22-25</sup> little is known about the patient- and clinician-specific factors associated with any opioid and chronic opioid prescribing in primary care. The reliance in these studies on claims data limited the examination of patient, clinician, and practice characteristics. This limitation could be overcome by the use of electronic health record (EHR) data to examine patient and clinician characteristics that could account for risky opioid prescribing. Linking clinicians' perspectives to EHR data on prescribing practices can demonstrate the complexities of chronic opioid prescribing in primary care practice.

## METHODS

### Study Design

Using a mixed methods approach, we first completed a secondary analysis of 2016 EHR data from primary care practices in the Virginia Ambulatory Care Outcomes Research Network (ACORN) to describe patient and clinician characteristics associated with opioid prescribing and then interviewed 16 primary care clinicians from these practices to obtain their perspectives on chronic opioid prescribing. The Virginia Commonwealth University Institutional Review Board approved this study.

### Setting

The Virginia Ambulatory Care Outcomes Research Network is a practice-based research network consisting of more than 150 primary care practices across the Commonwealth of Virginia. Practices represent a broad spectrum of settings ranging from academic to group practices to solo clinicians and are located in rural, suburban, and urban locations. For this study, we selected 21 primary care practices to represent more affluent, suburban, and more disadvantaged, urban settings and included EHR data from all clinicians from these practices (271 clinicians).

### Quantitative Data Collection

We extracted EHR data for patients seen from January 1, 2016 to December 31, 2016 in each of the included primary care clinics. Extracted data included patient demographics, diagnoses, and prescriptions. Each

patient was linked with their primary care clinician and cross-matched to clinician and practice characteristics, as found in the ACORN database. We queried all prescription data to extract opioid and benzodiazepine prescriptions (including benzodiazepine because it was identified by the CDC as a risk factor for opioid-related harm). We excluded patients aged <18 years, with sickle cell disease, in palliative care, receiving buprenorphine for opioid use disorder, or with cancer.

### Qualitative Data Collection

We conducted semistructured interviews with 16 primary care clinicians purposefully selected from the suburban and rural samples. Authors E.M.B. and V.J. conducted the interviews over the phone, which were audio recorded and lasted 30 to 40 minutes each. Using an interview guide, we asked clinicians about (1) their individual and clinic-based policies regarding appropriate opioid prescribing and treatment of chronic pain, (2) experiences with prescribing opioids to patients with chronic pain, (3) understanding and application of red flags for opioid prescribing, and (4) perceived challenges of weaning patients off chronic opioids.

### Statistical Analysis

We calculated counts and frequencies of opioid medications prescribed by clinicians in 2016 to determine the most frequently prescribed opioids. We identified patients on chronic opioids based on the CDC definition of receipt of an opioid prescription for 3 consecutive months.<sup>15</sup> Based on how medications were presented in the EHRs, we considered this to be 3 consecutive calendar months. We then used  $\chi^2$  tests to determine associations between chronic opioid use and patient demographic characteristics and medical comorbidities that were identified by the CDC guideline as high risk for opioid-related harms.<sup>15</sup> The risks include depression and anxiety, renal insufficiency, hepatic insufficiency, concurrent benzodiazepine use, substance use disorder, and sleep apnea. Next, we calculated the daily morphine milligram equivalent (MME) per patient on chronic opioids by multiplying the MME conversion factor (based on opioid formulation) by the pill count and then dividing by 30 (for the average number of days per month). We then determined MME per clinician with at least 1 patient on chronic opioids and per clinic serving at least 1 patient on chronic opioids as the total MME divided by the total number of prescriptions, then dividing by 30 ( $[\text{total MME}/\text{total prescriptions}]/30$ ). Because of the right-skewed nature of MME, we applied the Kruskal-Wallis nonparametric rank test to compare the distribution of daily MME by patient, clinician, and practice characteristics. Resulting *P*-values, medians, and inter-

**Table 1. Top 10 Prescribed Opioids in Primary Care Clinics, by Setting**

| Urban, Underserved Clinics                        |                              |   | Suburban Clinics                                  |                              |   |
|---|------------------------------|---|---|------------------------------|---|
| Ranking Within Overall Prescriptions <sup>a</sup> | Medication Name              | No. (Percentage of Total Prescriptions) | Ranking Within Overall Prescriptions <sup>a</sup> | Medication Name              | No. (Percentage of Total Prescriptions) |
| 6   | Oxycodone                    | 3,365 (2.5)                             | 47  | Codeine-guaifenesin          | 2,271 (0.6)                             |
| 8   | Acetaminophen-oxycodone      | 2,873 (2.1)                             | 56  | Hydrocodone-acetaminophen    | 2,039 (0.5)                             |
| 13  | Acetaminophen-hydrocodone    | 2,074 (1.6)                             | 60  | Hydrocodone-chlorpheniramine | 1,873 (0.5)                             |
| 15  | Tramadol                     | 1,855 (1.4)                             | 61  | Oxycodone-acetaminophen      | 1,855 (0.5)                             |
| 61  | Fentanyl                     | 554 (0.4)                               | 68  | Tramadol                     | 1,680 (0.4)                             |
| 85  | Morphine                     | 418 (0.3)                               | 102   | Oxycodone                    | 865 (0.2)                               |
| 88  | Codeine-guaifenesin          | 398 (0.3)                               | 134   | Acetaminophen-codeine        | 621 (0.2)                               |
| 95  | Methadone                    | 368 (0.3)                               | 196   | Morphine                     | 295 (0.1)                               |
| 117   | Chlorpheniramine-hydrocodone | 291 (0.2)                               | 232   | Promethazine-codeine         | 221 (0.1)                               |
| 131   | Acetaminophen-codeine        | 246 (0.2)                               | 236   | Hydromorphone                | 210 (0.1)                               |

<sup>a</sup>This ranking compares the top 10 prescribed opioids with all prescriptions (including nonopioid prescriptions) at 21 primary care clinics. Note that opioids can be prescribed only at monthly intervals without refills, whereas other medications may have refills that can last for up to 1 year.

quartile ranges were reported. We used SAS statistical software version 9.4 (SAS Institute).

### Qualitative Data Analysis

Interview transcripts were analyzed via a combination of template and emergent coding processes.<sup>26</sup> Template-based codes were derived from the interview guide, including themes related to the initiation, inheritance, and management of patients on opioids for chronic pain, and clinicians' experiences attempting to wean patients off opioids. Authors S.T.T., E.M.B., and V.J. then read through the transcripts separately before meeting to discuss emergent themes and findings.

## RESULTS

### Overall Opioid Prescribing

Of 545,872 total prescriptions written in 2016 by a primary care clinician, 25,450 (4.7%) were opioid prescriptions. Of the 84,929 patients seen in 2016, 9,462 (11.1%) received an opioid prescription. Overall, oxycodone-acetaminophen was the most commonly prescribed opioid, followed by oxycodone. In urban, underserved clinics in our sample, 9.7% of prescriptions written were opioid prescriptions, and oxycodone, which was the most frequently prescribed opioid, was the 6th most commonly written prescription (Table 1). In suburban clinics in our sample, 3.0% of prescriptions were opioids, and the top prescribed opioid was codeine-guaifenesin, which was the 47th most commonly written prescription.

### Chronic Opioid Prescribing

Of 84,929 patients, 902 (1.1%) patients received chronic opioid prescriptions in 2016. Women were more likely than men to receive chronic opioid prescriptions (65.5% of patients receiving chronic opioids and 60.2% of patients not receiving chronic opioids,  $P < .01$ ). Furthermore, blacks or African Americans constituted 14.7% of those not on chronic opioids and

**Table 2. Demographic Characteristics and Risk Profiles for Opioid-Related Harms of Patients Receiving Chronic Opioids**

|  | Patients on Chronic Opioids, n = 902 (%) <sup>a</sup> | Patients Not on Chronic Opioids, n = 84,027 (%) <sup>a</sup> | P Value |
|--|---|--|---------|
| <b>Demographic characteristics</b>     |   |  |         |
| Sex, female                            | 591 (65.5%)   | 50,575 (60.2%)   | <.01    |
| Race                                   |   |  |         |
| Asian/Asian American                   | 6 (0.7%)  | 6,034 (7.2%)   | <.01    |
| Black/African American                 | 389 (43.1%)   | 12,377 (14.7%)   |         |
| White                                  | 435 (48.2%)   | 48,200 (57.4%)   |         |
| Other                                  | 20 (2.2%)   | 4,509 (5.4%)   |         |
| Declined                               | 52 (5.8%)   | 12,907 (15.4%)   |         |
| Ethnicity, Hispanic                    | 12 (1.4%)   | 3,576 (5.4%)   | <.01    |
| <b>Medical comorbidities</b>           |   |  |         |
| Sleep apnea                            | 194 (21.5%)   | 7001 (8.3%)  | <.01    |
| Depression or anxiety                  | 537 (59.5%)   | 23,693 (28.2%)   | <.01    |
| Substance use disorder                 | 118 (13.1%)   | 1,802 (2.1%)   | <.01    |
| Hepatic insufficiency                  | 153 (17.0%)   | 4,020 (4.8%)   | <.01    |
| Renal insufficiency                    | 174 (19.3%)   | 2,439 (2.9%)   | <.01    |
| Concurrent benzodiazepine prescription | 216 (24.0%)   | 714 (8.3%) <sup>b</sup>                                      | <.01    |

<sup>a</sup>The denominator for all percentages is the n listed in the column heading unless otherwise indicated.

<sup>b</sup>Because concurrent benzodiazepine prescription is relevant only for patients with an opioid prescription, the denominator here is 8,560 to account for patients who have received an opioid prescription in 2016.

43.1% of those on chronic opioids seen in primary care ( $P < .01$ ), whereas 57.4% of those not on chronic opioids and 48.2% of those on chronic opioids were white (Table 2). Of the risk factors identified by the CDC guideline for opioid-related harms, comorbidities such as sleep apnea, depression or anxiety, substance use disorder, hepatic insufficiency, renal insufficiency, and concurrent benzodiazepine use were associated with receiving chronic opioids (Table 2). The median MME per day also varied based on demographics and comorbidities of patients on chronic opioids. Patients with depression or anxiety, substance use disorder, hepatic insufficiency, or renal insufficiency were more likely than those without these comorbidities to be on a higher overall MME per day (Table 3). Those of black or African American and white race received similar MMEs per day ( $P = 0.14$ ).

Clinicians who are MD or NP (vs DO or PA), female (vs male), internists (vs family physicians), and residents (vs attendings) were more likely to prescribe higher daily MMEs to patients on chronic opioids (Table 3). Although large differences in median MME were observed for clinic type and the number of clinicians at the clinic, none of the clinic-level characteristics were significantly associated with MME.

### Clinician Perspectives

Clinician interviews revealed multiple factors informing the use of prescription opioids for chronic pain in primary care (Table 4). Clinicians largely saw the use of opioids to manage chronic pain as appropriate when caring for patients with extensive medical comorbidities or patients for whom nonopioid pain medications were contraindicated. Although all the clinicians we spoke to were aware of the CDC guidelines and risk factors for misuse, they maintained that the benefits of managing chronic pain with opi-

oids at times outweighed the risks, particularly when it restored functional capacity and quality of life. However, despite the perceived benefits of opioids, most clinicians were reluctant to initiate patients on opioids for chronic pain. Instead, most clinicians reported having inherited the bulk of their patients with chronic

**Table 3. Variation in Daily Morphine Milligram Equivalent (MME) for Patients on Chronic Opioids by Patient, Clinician, and Clinic Characteristics**

| Characteristics                        |                        | N   | Median Daily MME (IQR) | Kruskal-Wallis P Value |
|--|------------------------|-----|------------------------|------------------------|
| <b>Patient level</b>                   |                        |     |                        |                        |
| Sex                                    | Female                 | 591 | 30.0 (15.0-51.4)       | .06                    |
|  | Male                   | 311 | 30.0 (15.9-60.0)       |                        |
| Race                                   | Asian/Asian American   | 6   | 13.7 (5.8-36.3)        | <.01                   |
|  | Black/African American | 389 | 30.0 (20.0-52.5)       |                        |
|  | White                  | 435 | 30.0 (13.7-60.0)       |                        |
|  | Other                  | 20  | 24.2 (11.3-59.6)       |                        |
|  | Declined               | 52  | 13.1 (5.7-30.7)        |                        |
| Ethnicity                              | Hispanic               | 12  | 20.6 (5.8-49.4)        | .08                    |
|  | Not Hispanic           | 820 | 30.0 (15.7-57.2)       |                        |
| Sleep apnea                            | Yes                    | 194 | 30.0 (20.0-57.2)       | .08                    |
|  | No                     | 708 | 30.0 (15.0-55.5)       |                        |
| Depression or anxiety                  | Yes                    | 537 | 31.5 (16.7-60.0)       | <.01                   |
|  | No                     | 365 | 25.6 (15.0-48.3)       |                        |
| Substance use disorder                 | Yes                    | 118 | 41.4 (22.5-82.5)       | <.01                   |
|  | No                     | 784 | 30.0 (15.0-52.5)       |                        |
| Hepatic insufficiency                  | Yes                    | 153 | 38.9 (18.2-60.0)       | .01                    |
|  | No                     | 749 | 30.0 (15.0-53.7)       |                        |
| Renal insufficiency                    | Yes                    | 174 | 30.0 (20.0-60.0)       | .03                    |
|  | No                     | 728 | 30.0 (15.0-54.0)       |                        |
| Concurrent benzodiazepine prescription | Yes                    | 216 | 31.0 (15.0-69.6)       | .09                    |
|  | No                     | 686 | 30.0 (15.0-51.1)       |                        |
| <b>Clinician level</b>                 |                        |     |                        |                        |
| Degree type                            | MD                     | 157 | 43.3 (19.1-67.7)       | <.01                   |
|  | DO                     | 10  | 38.6 (26.3-57.9)       |                        |
|  | NP                     | 21  | 18.4 (7.1-57.0)        |                        |
|  | PA                     | 7   | 5.1 (3.0-14.6)         |                        |
|  | Other                  | 1   | 20.0 (20.0-20.0)       |                        |
| Age                                    | <50                    | 137 | 43.4 (18.2-61.7)       | .24                    |
|  | ≥50                    | 43  | 35.1 (14.0-56.5)       |                        |
| Sex                                    | Female                 | 113 | 33.6 (11.2-53.2)       | <.01                   |
|  | Male                   | 83  | 46.8 (25.1-69.7)       |                        |
| Specialty                              | Family medicine        | 103 | 18.2 (7.5-42.0)        | <.01                   |
|  | Internal medicine      | 93  | 51.0 (40.1-74.2)       |                        |
| Trainee or attending status            | Attending              | 131 | 25.4 (9.2-56.5)        | <.01                   |
|  | Resident               | 65  | 52.5 (40.2-71.0)       |                        |
| <b>Clinic level</b>                    |                        |     |                        |                        |
| Type                                   | Urban, underserved     | 8   | 61.6 (54.4-65.4)       | .05                    |
|  | Suburban               | 10  | 26.1 (15.0-57.6)       |                        |
| Number of clinicians                   | <5 clinicians          | 5   | 25.1 (13.7-51.0)       | .26                    |
|  | 5+ clinicians          | 13  | 57.7 (28.3-64.1)       |                        |
| Training site?                         | Residents              | 2   | 68.3 (64.1-72.5)       | .09                    |
|  | No residents           | 16  | 40.0 (22.1-61.6)       |                        |

**Table 4. Themes and Findings From Clinician Interviews**

| Themes  | Findings   | Example Quotes  |
|---|--|---|
| Inheriting patients on chronic opioids          | Clinicians feel frustrated after inheriting patients with chronic pain on opioids.                         | "Her pain doctor got fired or, you know, loss of license (I can't remember what happened) so she came to me very angry, very difficult conversation wanting to be on the same huge doses."  |
|   | Clinicians feel pressured to manage inappropriate amounts or types of chronic opioids.                     | "I get a call from the case manager who says would you be willing to consider the following: Would you be willing to consider prescribing her methadone as a pain management medication and not as methadone maintenance for her substance abuse disorder. . . . Looking back now it's one of these . . . what the heck was I thinking kind of thing. . . . I sort of felt like I was getting stiff-armed into things." |
|   | Primary care often becomes the default chronic pain medication manager.                                    | "She is seeing a psychiatrist, a pain specialist, an orthopedist, and a rheumatologist. She's got all of these people involved in her care but, for some reason, I'm the person who stuck with her pain med management and nobody is super-eager to touch that."  |
| Co-occurring health problems                    | Extent or complexity of medical comorbidities often takes priority.  | "He's kind of a mess. . . . Bad asthma. Bad COPD. Bad heart. He's been in the hospital more than he's been out and was diagnosed with leukemia about six months ago. I told him, you know, your pain pills are the least of my concerns; whatever it takes to get you through the day."   |
|   | Patients with chronic pain often have complex social situations.   | "She's someone I've been trying to wean but her social situation is just a disaster. She's leaving an abusive relationship. I think she's actually homeless right now."   |
|   | Contraindication of nonopioid pain medications limits pain management strategies.                          | "I will say that the older ones . . . have crappy kidneys and contraindications to a lot of other things that you could actually put them on to help with their pain."  |
|   | Access to adjunctive pain management strategies is limited.  | "She's stable and is a single mom working and has limited access to adjunctive therapies and physical therapies. I'm a little stuck on her."  |
| Benefits of opioids for chronic pain management | Chronic opioids are necessary to sustain functional capacity and quality of life.                          | "I feel like a change is not indicated at this time because she needs the medication in order to do her job and go to work and help her family, and it is working for her. She is overall low-risk for abuse. I don't feel compelled to make a change for her."   |
|   | Chronic opioids help manage chronic diseases.  | "She's got chronic pancreatitis and without this dose she can't eat and she gets malnourished and gets really sick."  |
| Challenges with weaning                         | Clinicians lack time to manage chronic opioids.  | "It might be different if I were a chronic pain management doctor and I was seeing 20 patients a day every day and just doing this."  |
|   | Lack of control over other sources of opioids undermines weaning attempts.                                 | "The amount of narcotics she gets in the hospital blows us out of the water. The problem is she is on around-the-clock high-dose IV-pain medicine when she goes to the hospital."   |
|   | Clinicians have a hard time justifying weaning stable patients receiving long-term opioid pain management. | "It's very hard with patients who have been on them [a long time] to get them off. . . . Five to seven years ago, [when many of my patients started on opioid], this wasn't even part of the cultural discussion. It was like patients just came in and demanded these medications, they could be downright hostile with you. Now, I could tell them we're going to wean down, but it would be a really ugly fight."    |

pain from colleagues. Many felt frustrated at having to act as a pain specialist for patients taking large amounts of opioids that were sometimes in amounts or for conditions they thought were inappropriate. Frustrations were equally compounded by a perceived lack of time to appropriately manage patients' chronic pain and a lack of control over patients' access to other sources of opioids, such as in the hospital or from specialists.

## DISCUSSION

Substantially higher rates of opioid prescribing were demonstrated in urban, underserved settings compared with suburban settings. Uniquely, our study found that being of black or African American race was associated with receipt of chronic opioid prescriptions. Previous studies examining opioid prescribing have demonstrated that white patients are more likely than black

or African American patients to receive opioids in emergency department settings<sup>27</sup> and overall.<sup>28,29</sup> Our study, which focuses on primary care settings, suggests that chronic opioid prescribing may follow different racial trends. There may be other mitigating factors for opioid prescribing among patients who are on chronic opioids instead of opioids for acute purposes. Future studies are needed to elucidate why black and African American patients receive more chronic opioid prescriptions than white patients in primary care.

Our study also showed that primary care patients with higher comorbidities were more likely not only to receive chronic opioid prescriptions but also to receive these prescriptions at higher dosages (in MME per day). This finding is particularly concerning given the recent CDC guideline recommending caution in prescribing opioids for those with the comorbidities examined in our study. This result may not be unexpected



because many patients with high-risk comorbidities may have contraindications to nonopioid medication alternatives. Nevertheless, patients with these comorbidities are at significantly higher risk of opioid-related harms, including overdose and death.

Although guidelines suggest engaging patients in shared decision making, increasing the availability of nonopioid treatment modalities, and increasing the availability of medication-assisted treatment for those with concurrent opioid use disorders,<sup>15,17</sup> primary care clinicians identified multiple challenges in trying to reduce risk. These included contraindications to nonopioid treatment alternatives, lack of access to adjunctive management strategies, limited time, and the difficulty of weaning in patients on long-term chronic opioids. New interventions to help primary care clinicians overcome these barriers must be developed and tested in order for primary care clinicians to successfully wean patients from chronic opioids.

Our study has several limitations. First, our study examined prescribed, not filled, opioid prescriptions because we relied on EHR data. Second, our study examined data from only 21 clinics in Virginia, which limited the power to detect associations based on clinic characteristics. Although this sample included 84,929 primary care patients, it may not be generalizable to other primary care settings. Third, opioids can be prescribed only at monthly intervals without refills, whereas other medications may have refills that can last for up to 1 year. This difference may result in overcounting of discrete opioid prescriptions compared with other medications in our prescription data. It would not affect the comparisons between patients who received and prescribers who wrote for opioids, however.

Chronic opioid prescribing in primary care varies significantly by patient and clinician characteristics. Particularly, there is a higher likelihood for blacks or African Americans, women, and those with CDC-identified comorbidities to receive chronic opioid prescriptions in primary care settings. Although primary care clinicians realize the importance of limiting chronic opioid prescribing, multiple barriers exist in weaning patients off chronic opioids. Future studies should elucidate why specific trends in opioids prescribing exist, compare the differences in opioid prescribing in various settings, and explore possible interventions to help primary care clinicians overcome barriers in weaning patients with high risks of opioid-related harms.

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## References

- Seth P, Scholl L, Rudd RA, Bacon S. Overdose deaths involving opioids, cocaine, and psychostimulants—United States, 2015-2016. *MMWR Morb Mortal Wkly Rep*. 2018;67(12):349-358.
- National Center for Health Statistics Division of Vital Statistics. Mortality data. <http://www.cdc.gov/nchs/deaths.htm>. Accessed Jul 27, 2018.
- Substance Abuse and Mental Health Services Administration. *Key Substance Use and Mental Health Indicators in the United States: Results From the 2016 National Survey on Drug Use and Health*. Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration; 2017.
- Centers for Disease Control and Prevention. *Annual Surveillance Report of Drug-Related Risks and Outcomes—United States, 2017*. Atlanta, GA: Centers for Disease Control and Prevention, US Department of Health and Human Services; 2017.
- Levy B, Paulozzi L, Mack KA, Jones CM. Trends in opioid analgesic-prescribing rates by specialty, U.S., 2007-2012. *Am J Prev Med*. 2015;49(3):409-413.
- Olsen Y, Daumit GL, Ford DE. Opioid prescriptions by U.S. primary care physicians from 1992 to 2001. *J Pain*. 2006;7(4):225-235.
- Rosenblatt RA, Andrilla CH, Catlin M, Larson EH. Geographic and specialty distribution of US physicians trained to treat opioid use disorder. *Ann Fam Med*. 2015;13(1):23-26.
- Wakeman SE, Pham-Kanter G, Baggett MV, Campbell EG. Medicine resident preparedness to diagnose and treat substance use disorders: impact of an enhanced curriculum. *Subst Abus*. 2015;36(4):427-433.
- Tong S, Sabo R, Aycok R, et al. Assessment of addiction medicine training in family medicine residency programs: a CERA study. *Fam Med*. 2017;49(7):537-543.
- Yanni LM, Weaver MF, Johnson BA, Morgan LA, Harrington SE, Ketchum JM. Management of chronic nonmalignant pain: a needs assessment in an internal medicine resident continuity clinic. *J Opioid Manag*. 2008;4(4):201-211.
- Survey Research Laboratory. *Missed Opportunity: National Survey of Primary Care Physicians and Patients on Substance Abuse*. Chicago, IL: University of Illinois at Chicago; 2000.
- Miller NS, Sheppard LM, Colenda CC, Magen J. Why physicians are unprepared to treat patients who have alcohol- and drug-related disorders. *Acad Med*. 2001;76(5):410-418.
- Ceasar R, Chang J, Zamora K, et al. Primary care providers' experiences with urine toxicology tests to manage prescription opioid misuse and substance use among chronic noncancer pain patients in safety net health care settings. *Subst Abus*. 2016;37(1):154-160.
- Upshur CC, Luckmann RS, Savageau JA. Primary care provider concerns about management of chronic pain in community clinic populations. *J Gen Intern Med*. 2006;21(6):652-655.
- Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. *JAMA*. 2016;315(15):1624-1645.
- Lembke A, Humphreys K, Newmark J. Weighing the risks and benefits of chronic opioid therapy. *Am Fam Physician*. 2016;93(12):982-990.
- American Academy of Family Physicians. AAFP chronic pain management toolkit. <https://www.aafp.org/patient-care/public-health/pain-opioids/cpm-toolkit.html>. Accessed Jul 27, 2018.

18. National Institute on Drug Abuse. Chart of evidence-based screening tools for adults and adolescents. <https://www.drugabuse.gov/nidamed-medical-health-professionals/tool-resources-your-practice/screening-assessment-drug-testing-resources/chart-evidence-based-screening-tools>. Updated Jun 2018. Accessed Jul 27, 2018.
19. Onishi E, Kobayashi T, Dexter E, Marino M, Maeno T, Deyo RA. Comparison of opioid prescribing patterns in the United States and Japan: primary care physicians' attitudes and perceptions. *J Am Board Fam Med*. 2017;30(2):248-254.
20. Chen JH, Humphreys K, Shah NH, Lembke A. Distribution of opioids by different types of medicare prescribers. *JAMA Intern Med*. 2016;176(2):259-261.
21. Centers for Medicare & Medicaid Services. Medicare part D opioid prescribing mapping tool. 2018. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/OpioidMap.html>. Accessed June 19, 2018.
22. Mordecai L, Reynolds C, Donaldson LJ, de C Williams AC. Patterns of regional variation of opioid prescribing in primary care in England: a retrospective observational study. *Br J Gen Pract*. 2018;68(668):e225-e233.
23. Zin CS, Chen LC, Knaggs RD. Changes in trends and pattern of strong opioid prescribing in primary care. *Eur J Pain*. 2014;18(9):1343-1351.
24. McDonald DC, Carlson K, Izrael D. Geographic variation in opioid prescribing in the U.S. *J Pain*. 2012;13(10):988-996.
25. Prunuske JP, St Hill CA, Hager KD, et al. Opioid prescribing patterns for non-malignant chronic pain for rural versus non-rural US adults: a population-based study using 2010 NAMCS data. *BMC Health Serv Res*. 2014;14(1):563.
26. Ryan GW, Bernard HW. Techniques to identify themes. *Field Methods*. 2003;5(1):85-109.
27. Pletcher MJ, Kertesz SG, Kohn MA, Gonzales R. Trends in opioid prescribing by race/ethnicity for patients seeking care in US emergency departments. *JAMA*. 2008;299(1):70-78.
28. Ringwalt C, Roberts AW, Gugelmann H, Skinner AC. Racial disparities across provider specialties in opioid prescriptions dispensed to Medicaid beneficiaries with chronic noncancer pain. *Pain Med*. 2015;16(4):633-640.
29. Guy GP Jr, Zhang K, Bohm MK, et al. Vital signs: changes in opioid prescribing in the United States, 2006-2015. *MMWR Morb Mortal Wkly Rep*. 2017;66(26):697-704.

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