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Provider Opioid Prescribing Practices and the Belief that Opioids Keep People Living with HIV Engaged in Care: A Cross-sectional Study

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Authors' contributions

JT, AW, JL, JC, MS, JS, CR contributed to study design

ML, CR, CB, KO contributed to data collection and management

LF, DC contributed to data analysis

JT drafted the manuscript

All authors contributed to interpretation of the results and critical revision of the manuscript

All authors have read and approved the final manuscript.

Conflict of interests

The authors have no financial conflicts of interest to declare.

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Abstract

We describe HIV providers' opioid prescribing practices and assess whether belief that chronic opioid therapy (COT) keeps people living with HIV (PLWH) engaged in care is associated with differences in these practices among providers from two HIV clinics. We conducted logistic regression to evaluate the association between the belief that COT keeps PLWH engaged in care and at least one component of guideline-recommended care (i.e., urine drug tests, treatment agreements, and/or prescription monitoring program use). The sample included 41 providers with a median age of 42 years, 63% female, 37% non-white. Routine adherence to guideline-recommended practices was: 34% urine drug tests, 27% treatment agreements, and 17% prescription monitoring program. Over half [54%] agreed that COT keeps PLWH engaged in care. There was no significant association between belief that COT keeps persons living with HIV engaged care and routinely providing any recommended COT care component (aOR 2.38; 95% CI 0.65-8.73). Most HIV providers do not routinely follow guidelines for opioid prescribing. We observed a positive association between belief that COT keeps PLWH engaged in care and following any guideline-recommended prescribing practices, although the result was not statistically significant. Interventions are needed to improve guideline-concordant care for COT by HIV providers.

Keywords

HIV; Pain; Chronic Pain; Analgesics; Opioids; Opioid-Related Disorders; Physicians

Introduction

In the United States, chronic pain is a common clinical problem among people living with HIV (PLWH) (Lee et al., 2009; Merlin et al., 2012; Miaskowski et al., 2011; Namisango et al., 2012). Studies estimate that one-fifth of PLWH are prescribed chronic opioid therapy (COT) (Koeppel, Lyda, Johnson, & Armon, 2011; Lum et al., 2011), and PLWH more often receive opioids compared to persons without HIV (Edelman et al., 2013). Over time, the consequences of opioid overprescribing have become clear. A meta-analysis found that PLWH face an increased risk of overdose mortality (pooled risk ratio 1.74) (Green, McGowan, Yokell, Pouget, & Rich, 2012) and high rates of prescription opioid misuse (Vijayaraghavan, Penko, Bangsberg, Miaskowski, & Kushel MB, 2013).

Recent guidelines have been released by CDC and other agencies providing guidance on appropriate opioid prescribing as well as mitigation of risks (Bruce et al., 2017; Centers for Disease Control and Prevention (CDC), 2016; Chou et al., 2009). These guidelines include

monitoring measures with urine drug tests (UDT), utilizing prescription drug monitoring programs (PMP), written treatment agreements, pill counts, and counselling on risks, including overdose. Prior qualitative research has shown that some HIV providers believe that COT keeps PLWH engaged in care for their HIV infection (Starrels et al., 2016). Such a belief may be at odds with strict adherence to guidelines for monitoring COT which could lead to discontinuation of opioids. It is unknown whether such beliefs are associated with differences in opioid prescribing practices.

The primary goal of this study was to describe opioid prescribing practices among HIV providers who prescribe COT; the secondary goal was to compare whether practices differed among providers who did and did not believe that COT keeps PLWH engaged in care, hypothesizing that the belief would be associated with less guideline-recommended COT monitoring practices.

Methods

Study Design:

Cross-sectional analyses were conducted using baseline data from a pragmatic clinical trial of an intervention to improve opioid prescribing in HIV clinics (NCT02564341). The study sample included HIV physicians and advanced practice providers (APPs) (nurse practitioners and physician assistants) from two HIV clinics in Atlanta and Boston who were enrolled and assessed from September 2015 through December 2016. Eligibility criteria included 1) having at least one adult PLWH on COT and 2) no plans to leave the clinic within nine months. Chronic opioid therapy was defined as prescribing opioids continuously for at least three months (Starrels et al., 2010). Institutional Review Boards of Boston University Medical Campus and Emory University and the Grady (Grady Memorial Hospital) Research Oversight Committee approved this study.

Data Collection:

Physicians and APPs who were eligible and willing to participate gave informed consent and completed a baseline assessment that included the following components: demographics, training and practice characteristics, substance use among PLWH, and practices for assessing pain, treating pain, and managing prescribed opioids (Fox, Kunis, & Starrels, 2012; Lasser et al., 2015; Weiss et al., 2011). The research assessment included questions previously developed by the Transforming Opioid Prescribing in Primary Care (Lasser et al., 2015), the Integrated Buprenorphine & HIV Care Evaluation & Support (BHIVES) study (Weiss et al., 2011), and new questions developed by the study team. Providers were compensated with a \$100 gift card.

Measures:

The outcomes of interest in our descriptive analyses were self-reported adherence to strategies for COT management, namely urine drug tests (UDT), treatment agreements, prescription monitoring programs (PMP), pill counts, screening for misuse and other substance use, refusing early refills, and discussion of risks (overdose, sedation) and expectations for treatment (safe storage of medications, no diversion). Our main outcome

evaluated in regression analyses was a composite variable for the routine use of at least one of the following three key components of appropriate COT monitoring selected *a priori* on the basis of their being recommended by published practice guidelines (Bruce et al., 2017; Centers for Disease Control and Prevention (CDC), 2016; Chou et al., 2009) and being used by other researchers (Midboe et al., 2012): 1) UDT, 2) written treatment agreements (signed documents that outline the opioid care plan, risk/benefits, and expectations), and 3) PMP. Providers were asked how often they followed those clinical practices with response categories of “routinely” (i.e., “I do this with most or all my patients”), “selectively” (i.e., “I only do this sometimes.”), “never” and “this is not available in my practice”. We defined routine practice as a response of “routinely” versus all other response choices.

The main independent variable was believing that COT kept PLWH engaged in care, as defined by answering “agree” or “strongly agree” (vs. “strongly disagree”, “disagree”, or “neutral”) to the question “Indicate whether you disagree or agree with the following: “Chronic opioid therapy for pain helps keep my HIV-infected patients engaged in care for their HIV infection”.

Statistical Analysis:

Multiple logistic regression was used to evaluate the association between belief that COT keeps PLWH engaged in care and the odds of routinely following at least one of the three core components of recommended COT care. The models controlled for age and sex only, a priori selected as potential confounders based on prior literature on gender differences in opioid prescribing (Lum et al., 2011), and rationale that younger physicians would be familiar with the most recent guidelines. In exploratory analyses, we fit logistic regression analyses for each individual behavior (UDT, agreements, and PMP). The latter models were not adjusted for age and sex due to the small number of outcomes. Analyses were conducted using the statistical package SAS 9.3. (SAS Institute, Inc., NC, USA).

Results

Overall 41 providers were in the sample: 11 from Boston and 30 from Atlanta. No eligible providers chose not to participate. 28 were attending physicians, 4 were physicians in Infectious Diseases fellowships, 6 were nurse practitioners, and 3 were physician assistants. The median age was 42 years (range 30 to 68), 26 (63%) were female, 15 (37%) were of non-white race, and 4 (10%) were of Hispanic ethnicity (Table 1). On a scale of 1–10, median satisfaction and confidence in managing COT were 4.0 (min, max: 1, 9) and 5.0 (min, max: 2, 9), respectively. Self-reported routine adherence to the three key components of guideline-concordant COT monitoring was not the norm: 34% reported using urine drug tests, 27% reported using treatment agreements, and 17% reported using prescription monitoring program. Nearly half of the providers (20 [49%]) reported routine use of one or more of the three core practices.

Over half of the providers (22 [54%]) agreed with the statement that chronic opioid therapy for pain helps keep PLWH engaged in care for their HIV infection. Providers who agreed with that statement were older (median age 45 v. 39), more often female (68 v. 58%), and non-white (45% v. 26%) (Table 1). There were no differences in satisfaction or confidence in

managing COT among providers who did and did not believe it kept patients engaged in care.

Of the providers who believed that COT kept PLWH engaged in care, 59% reported routine use of at least one of the key components of recommended COT care compared to 37% among providers who did not hold that belief (Table 2). After adjusting for age and gender, the relative odds for routinely practicing key components of COT care were higher among providers who believed in COT keeping PLWH engaged in care, although results were not statistically significant (aOR=2.38; 95% CI 0.65-8.73) (Table 3). When examining each component separately, we observed notable positive odds ratios for each individual component of recommended COT care with keeping PLWH engaged in care, although the results were statistically significant only for UDT (OR=5.33 [95% CI: 1.20-23.66])

Discussion

This study was undertaken to describe opioid prescribing practices among HIV providers who prescribe COT. Among this sample of HIV providers in two clinics, it was demonstrated that most did not routinely follow guidelines for opioid prescribing. We were unable to detect an independent association between providers' belief that COT helps keep patients engaged in HIV care and routine provision of at least one guideline-recommended care (urine drug tests, treatment agreements, PMP). However, unadjusted results suggested that providers with those beliefs may have higher odds of practicing key risk mitigation strategies (UDT).

Our results are strikingly similar to a study of opioid prescribing practices among HIV providers conducted nearly a decade ago (Lum et al., 2011) demonstrating persistence of a large gap between guidelines and clinical practice. In a prior qualitative study of HIV providers, researchers reported a tension between guideline-recommended opioid prescribing practices and the "HIV paradigm" of care, which prioritizes HIV treatment goals above all others and seeks to preserve the provider as an "ally" (Starrels et al., 2016). In that study, some providers felt that recommended monitoring practices, such as urine drug tests, might jeopardize their relationships with patients. Based on that prior research, the findings in this analysis were unexpected: providers who believed that COT helped keep PLWH engaged in care appeared more likely to perform key components of guideline-recommended care.

The study has several limitations. Provider assessments were conducted at HIV clinics in Atlanta and Boston and may not be representative of other settings. The provider sample was relatively small, limiting study power. Our study is based on self-report and not objective measurements of those clinical practices. As such, reports may be subject to social desirability bias and providers may have provided more generous estimates of their frequency of monitoring behaviors. In that case, our findings may have under-estimated the gaps in care.

In summary, this study of HIV treatment providers found that a majority do not routinely fulfil recommended clinical practice guidelines for COT care. We did not detect statistically

significant differences in adherence to guidelines among providers who believed that COT keeps patients engaged in HIV care compared to providers who did not share that belief. These results are reassuring that the desire to retain patients in HIV care and achieve viral suppression does not appear to adversely compete with HIV providers' willingness to provide guideline-concordant COT.

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Table 1: Demographic and practice characteristics of HIV providers who provide chronic opioid therapy (COT) (n=41)

Characteristic	Overall n=41	Believes COT keeps HIV-pts engaged n=22	Does not believe COT keeps HIV-pts engaged n=19	p-value
Age (median; min, max)	42 (30, 68)	45 (31, 68)	39 (30, 65)	0.76 ¹
Female	26 (63%)	15 (68%)	11 (58%)	0.62 ²
Race				0.18 ²
White	26 (63%)	12 (55%)	14 (74%)	
Black	4 (10%)	4 (18%)	0 (0.0%)	
Asian	7 (17%)	4 (18%)	3 (16%)	
Mixed/Other	4 (10%)	2 (9%)	2 (11%)	
Hispanic	4 (10%)	1 (5%)	3 (16%)	0.32 ²
Professional title				0.54 ²
Physician (Attending)	28 (68%)	16 (73%)	12 (63%)	
Physician (Fellow)	4 (10%)	1 (5%)	3 (16%)	
Nurse Practitioner	6 (15%)	4 (18%)	2 (11%)	
Physician Assistant	3 (7%)	1 (5%)	2 (11%)	
Buprenorphine waived	5 (12%)	4 (18%)	1 (5%)	0.53 ²
Estimated % of patients in practice with chronic pain (median; min, max)	15% (1, 90)	20% (1, 90)	15% (1, 50)	0.20 ¹
Estimated % of patients in practice on COT for pain (median; min, max)	5% (1, 90)	10% (1, 90)	5% (1, 40)	0.09 ¹
Satisfaction managing COT* (median, min, max)	4.0 (1, 9)	4.5 (1, 9)	3.0 (1, 9)	0.43 ¹
Confidence managing COT* (median; min, max)	5.0 (2, 9)	6.0 (2, 8)	5.0 (2, 9)	0.75 ¹

* Scale 1-10; 1=Not at all, 10=Extremely

¹ t-test

² Fisher's exact

Routine adherence to recommended strategies for COT management among HIV providers, overall and stratified by the belief that COT impacts patient engagement

Table 2:

Characteristic	Overall n=41	Believes COT keeps HIV-pts engaged n=22	Does not believe COT keeps HIV-pts engaged n=19	p-value
Conducts urine drug tests	14 (34%)	11 (50%)	3 (16%)	0.02
Uses treatment agreements	11 (27%)	8 (36%)	3 (16%)	0.14
Uses prescription monitoring programs	7 (17%)	5 (23%)	2 (11%)	0.16*
Routine use of urine drug tests, treatment agreements, or PMP	20 (49%)	13 (59%)	7 (37%)	0.16
Screens for misuse using validated tool	3 (7%)	2 (9%)	1 (5%)	1.00*
Uses scheduled pill counts	0 (0%)	0 (0%)	0 (0%)	
Refuses early opioid refills	22 (54%)	14 (64%)	8 (42%)	0.17
Discusses:				
Drug-drug interactions	25 (61%)	11 (50%)	14 (74%)	0.12
Diversion	8 (20%)	5 (23%)	3 (17%)	0.71*
Safe storage of medications	8 (20%)	7 (32%)	1 (5%)	0.05*
Alcohol use	24 (59%)	8 (36%)	16 (84%)	<0.01
Illicit drug use	33 (81%)	16 (73%)	17 (90%)	0.25*
Marijuana use	13 (32%)	6 (27%)	7 (37%)	0.51
Over-sedation	23 (56%)	12 (55%)	11 (58%)	0.83
Overdose	17 (42%)	8 (36%)	9 (47%)	0.48

* Fisher's exact test. All others reported are chi-square tests.

Belief that chronic opioid therapy keeps HIV-patients engaged in care and the relative odds for routine practice of key components of guideline-recommended care among HIV providers (n=41)

Table 3:

	Main Outcome		Exploratory Outcomes			
	Routine use of urine drug tests (UDT), treatment agreements, or PMP OR (95% CI)	aOR (95% CI)	Routine use of UDT OR* (95% CI)	Routine use of treatment agreements OR* (95% CI)	Routine use of PMP OR* (95% CI)	
Belief COT keeps patients engaged in care	2.48 (0.70, 8.74)	2.38 (0.65-8.73)	5.33 (1.20-23.66)	3.05 (0.67-13.77)	2.50 (0.42-14.71)	
Gender		2.55 (0.66-9.90)	--	--	--	
Age		0.99 (0.93-1.05)	--	--	--	

* Models not adjusted for other covariates due to small number of outcomes