Published in final edited form as:
Pain Med. 2014 October ; 15(10): 1724–1733. doi:10.1111/pme.12533.

Aberrant Drug-Related Behaviors: A qualitative analysis of medical record documentation in patients referred to an HIV/ Chronic pain clinic

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Abstract

Background—Due to rising rates of opioid addiction and overdose among individuals on chronic opioid therapy, aberrant drug related behaviors (ADRBs) are an important and challenging issue. Our objective was to qualitatively investigate the documentation of ADRBs in the medical record.

Methods—Manually abstracted provider notes from an HIV primary care clinic were analyzed using content analysis methods..

Results—Categories of ADRBs identified included patients requesting opioids, obtaining non-prescribed opioids, and becoming emotional about opioids. We also identified several types of provider language used when documenting ADRBs, including purely descriptive language, and emotional language such as labeling, frustration, and concern; and responses such as setting conditions for opioid prescription and action-oriented language.

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Conclusions—The impact of including emotional language in the medical record is unknown. Development of instruments that can be used to facilitate ADRB documentation, as well as evidence-based approaches to addressing ADRBs, is needed.

Keywords

HIV; aberrant behavior; opioid; misuse

INTRODUCTION

Due to rising rates of opioid addiction and overdose among individuals on chronic opioid therapy (COT), aberrant drug related behaviors (ADRBs) have emerged as an important issue in the chronic pain literature.(1) Despite limited evidence of efficacy(2) and growing concerns about risks of overdose and addiction,(2-8) COT is commonly prescribed for patients with chronic pain in primary care settings. Aberrant drug related behavior refer to behaviors that potentially indicate misuse of the prescribed opioid, or even addiction.(9) Aberrant drug related behaviors have been variably enumerated in the literature. Most studies have included behaviors such as stealing or borrowing opioid medications from others, patient-initiated dose escalation, concurrent use of an illicit substance, and diversion (the “transfer of a prescription drug from a lawful to an unlawful channel of distribution or use”(10)), and potentially less concerning behaviors such as requesting specific medications and “aggressive complaining” about the need for more medication.(11)

Aberrant drug-related behaviors are common. Reports of the prevalence of ADRBs among individuals on COT are has high as 85%; one structured evidence-based review found an average prevalence of 11.5%.(9, 12-14) This wide range is not surprising, as these studies were heterogeneous in their sample populations (e.g., general primary care, HIV-infected homeless patients, and patients with high rates of substance abuse), definitions of ADRBs, and methods of assessment (e.g. structured interviews, surveys, and chart review).

The implications of documented ADRBs – whether they lead to addiction, or result in unfavorable outcomes – are an important emerging area of investigation. A recent study did not find a relationship between physician documentation of ADRBs and a Diagnostic and Statistical Manual of Mental Disorders (DSM)-- interview-based diagnosis of problematic drug use disorder.(15) The authors of this study reasoned that physicians’ non-systematic documentation of ADRBs may have been the reason for the lack of correlation between documented ADRBs and a clinical diagnosis of problematic drug use. In HIV-infected patients, ADRBs have been associated with worse adherence to antiretroviral therapy.(16) Additionally, although there is a general understanding that some ADRBs are more severe than others (e.g., strong evidence of diversion almost certainly indicates misuse), and that a pattern of behavior is more significant than an isolated instance, there is no consensus on how providers should respond to ADRBs when they occur.(17) Some studies suggest that providers often continue to prescribe opioids despite the presence of ADRBs,(18) and lack confidence in their ability to identify misuse and addiction.(19) Others have found that that ADRBs commonly resolve on their own.(20) As a result of these gaps in knowledge, a recently published research agenda emphasizes the importance of research on how to

systematically monitor patients for ADRBs, and ultimately, on protocols for next steps in management.(21)

Medical record documentation that is accurate, contains enough information for diagnosis and treatment, explains providers' thought processes, and is understandable by patients and providers who may subsequently read it have been identified as essential components of patient-centered, team-based medical care.(22) This is particularly true when clinical uncertainty is high, as it is when interpreting and responding to ADRBs. Only one tool has been developed to guide providers in the systematic documentation of ADRBs; it has not been extensively investigated and is not in widespread use.(23) How providers currently document ADRBs is unknown.

Given the lack of consensus regarding the definition of ADRBs, how to address them, and potentially negative consequences of ADRBs (e.g., addiction), it is important to consider how these behaviors are documented in the medical record. Our objective was to describe how ADRBs are documented and addressed in provider notes from an HIV primary care clinic that does not have a systematic method for documenting these behaviors. This investigation may help us to understand some of the benefits and drawbacks of non-systematic ADRB documentation, and is a first step toward understanding the impact this documentation might have on both patients and their providers.

METHODS

Setting and Participants

We conducted a chart review study of patients seen in a chronic pain clinic situated within an HIV patient-centered medical home in an academic, urban setting. The HIV/chronic pain clinic is described in detail elsewhere.(24) Briefly, the HIV/chronic pain clinic mainly receives referrals from HIV primary care providers. The most common reasons for referral to the HIV/chronic pain clinic were low back pain, regional musculoskeletal pain syndromes, and peripheral neuropathy. Many patients also had comorbid psychiatric illness (e.g. 68% had a diagnosis of depression) or substance abuse (62%), and 50% were on opioid at the time of referral.(25)

Data Collection

Two trained chart reviewers (senior medical students) manually abstracted electronic medical record-based charts of all patients seen at least once in the HIV/chronic pain clinic between April 2008 and June 2011. The chart reviewers were trained by the study PI (JSM) and the first 10 charts were reviewed by the PI together with the chart reviewers to assure accurate and consistent abstraction. Inter-rater reliability was not assessed.

Like most other ambulatory clinics, there was no standard process in place for systematic ADRB documentation. For example, there was no designated place in the medical record to report ADRBs. For the current study, we sought to identify all instances where ADRBs were mentioned, and therefore reviewed textual data from visit notes with any provider, including primary care physicians, palliative care/pain specialist physicians, other consulting physicians/services, nurse practitioners, and registered nurses, before or after referral to the

HIV/chronic pain clinic. To enhance the sensitivity of our record review, we adapted the broad list of ADRBs compiled by Portenoy et al(11) and recently used by another group.(15) Our reviewers systematically abstracted documentation by clinicians of any instance of the following behaviors: focus on opioids at primary care visits; pattern of early refills (running out, requesting more repeatedly, escalating opioid use); multiple calls/visits to request more opioids; pattern of prescription problems (lost, stolen); more than one opioid prescriber or using the emergency room (ER) to obtain prescriptions; belligerent/angry/abusive behavior documented regarding opioid treatment; or any note that expresses provider concern about patient misuse, or abuse of opioids. The reviewers excerpted verbatim the provider's description of the ADRB, and also ample contextual text for the qualitative analysis. To protect confidentiality, all identifiable information (e.g., names of patients, providers, or clinical sites) was expunged during data extraction.

To describe the patient sample and compare patients with and without ADRBs, we abstracted socio-demographic and clinical data from the medical charts and patient-reported outcome data from patient questionnaires. Medical record data (e.g., age, race, sex, CD4+ T-cell count) closest to the date of referral to the HIV/chronic pain clinic were included. Data obtained from Patient Reported Outcome (PRO) questionnaires, routinely administered to patients enrolled in Center for AIDS Research Network of Integrated Clinical Systems (CNICS) protocol,(26, 27) include: assessments of pain and functional impairment (EuroQOL(28)), depression and anxiety (PHQ-9 and PHQ-Anxiety module(29)), and substance use (ASSIST(30)). Patient reported outcome data from within 1 year of referral to the HIV/chronic pain clinic was included in the analysis.

Analysis

Textual data from provider notes were uploaded into a qualitative data management software program, NVivo 10 (QSR International).(31) The study PI (JSM) and a qualitative analyst (IH) used content analysis methods to systematically code the data, and categorize the types of ADRBs that were identified.(32) These initial codes were matched with the list of ADRBs used for chart review as described above, and were supplemented with additional types that emerged from the data. Additionally, a second level of coding focused on the way that providers described the ADRBs. These language-based codes were developed inductively based on themes that emerged from the qualitative data rather than from any pre-existing framework. This coding focused not on the factual content of the ADRB, but rather on the type of language used by the provider to describe it. In addition, we quantitatively compared demographic and clinical data from patients with documented aberrant behaviors to those not noted to have aberrant behaviors. Fisher's exact tests were used to compare categorical variables, and Wilcoxon rank sum tests were used to compare continuous variables.

This study was approved by the Institution's Institutional Review Board.

RESULTS

Of 137 patients referred to the HIV/chronic pain program, 37 (27%) had documented ADRBs. Of the 37 with ADRBs, 34 (92%) had pain described as chronic. Most patients

were white (51%), male (59%), and median age was 44 (IQR 37-49) (Table 1). Over half of patients had current or prior substance abuse, and approximately one-third had depression or anxiety. Based on these characteristics, individuals with ADRBs were similar to individuals without ADRBs. The only statistically significant difference detected was for HIV transmission risk factor; men who have sex with men were less likely to have ADRBs than patients whose risk factor was heterosexual sex or injection drug use.

Categories of ADRBs documented in the medical record

Table 2 lists the categories of ADRBs identified during content analysis, and provides illustrative example(s) of each. Categories included patients requesting opioids, including specific opioids/dosages, obtaining non-prescribed opioids (such as buying or obtaining from a friend or family member), emergency room visits specifically related to opioids, and patients becoming emotional related to opioids.

Provider language

Our inductive coding process identified three major categories of language used by providers to describe ADRBs. This included purely descriptive language; emotional language such as labeling, frustration, and concern; and responses such as setting conditions for opioid prescription and action-oriented language.

Quotes shown below are presented verbatim from the medical record. However, we have eliminated shorthand common in medical records (e.g., “pt” meaning “patient”) for ease of reading, and have corrected typographical errors (e.g., “buas” was changed to “bus.” Technical language is explained in brackets.

Purely Descriptive Language—Providers sometimes used purely descriptive, non-emotional language to recount an interaction with a patient. Examples of purely descriptive provider language about ADRBs are devoid of labeling regarding patient intention, frustration, or concern; they simply seek to recount an interaction. Sometimes, descriptive language was detail-oriented, as with this quote, which stated the dose and price of an opioid being bought and sold by a patient:

> “States she is buying Lortab [hydrocodone/acetaminophen] 10mg from a friend ($5/pill). Mother states patient is actually selling these Lortabs to other people.”

Other examples were less detail-oriented, but still captured complex situations without including a provider’s emotional response to what has happened. For example, to document what would appear to be a concerning situation involving theft of opioids, one provider wrote the following:

> “Patient’s daughter called today to request that her mother’s pain patch be increased. She said that her mother said that the 25mcg patch is not effective. After more discussion about this, it sounds as if someone in the house has taken some of her patches.”

This quote does not contain information about how the provider feels about the situation, but rather, includes only facts about what the provider understood from the conversation.

However, in some cases such pure descriptive language was also accompanied by expressions of provider emotion. For example:

> "I believe patient is abusing Lortab and I refuse to give her any more. I truly believe she needs to get off of all pain medicines and focus on her HIV. I also have referred her to [pain clinic] for a second opinion and would also like for her to see [substance abuse program] for abuse. When I informed her of these plans, she became upset and left to go to ER to try to get pain medicines."

In this quote, the provider use descriptive language to identify the type of ADRB (abuse) describe his/her impression (patient should get off pain medicines and focus on HIV), and action-oriented language (specialist referrals). However, the use of the word "refuse" in the first sentence also gives the provider note a tone of frustration.

Labeling—We identified labeling language and language about a patient's underlying intention or motivation with regard to opioids. One commonly used vernacular term used to convey intent in an individual with ADRBs is "drug-seeking behavior." This term is used to describe patients who request a certain medication, such as an opioid, in an inappropriate manner for non-medical use (e.g., abuse or addiction) or out of proportion to their actual need for the medication.(33) For example:

> "Drug-seeking behavior, asked for Vicodin [hydrocodone/acetaminophen] on my way out door, says 'Dr. X gives it to help me feel better'."

> "Depressed guy with flat affect displaying drug-seeking behavior. Slowed down mentation, keep asking details of Ultram [tramadol] prescription and told nurses "that won't work."

In these quotes, the behavior itself (asking for an opioid at the last second, as the physician is leaving the room) is described, but the label "drug-seeking behavior" signals an additional layer of provider interpretation as to the patient's intention to obtain opioids for non-medical use.

Other quotes with labeling language include more explicit language about what the provider views as the patient's intention. In these examples, providers used descriptive language to set the stage and describe the situation in detail, but then used labeling language to explain what they think is actually happening. For example:

> "Said she left them [Lortab] on the bus and needs more. Has been dispensed 60 Lortab 10 in 2 weeks and claims to have none… [She] is obviously hoping to manipulate more narcotics from this clinic."

In another similar example, a detailed description of the situation was followed by a sentence describing "another attempt by [the patient]" to obtain opioids:

> "Requesting pain meds or to 'send me to the ER.' Told her I would have to speak to Dr. X as she has been told repeatedly he is to be her only clinic contact person. … [Patient] left stating she was going to the ER and would not wait for an answer from me. This is another attempt by [the patient] to receive pain meds, usually requests Lortabs, for numerous chronic and acute injuries."

Frustration—Frustration is defined as a feeling of insecurity or dissatisfaction related to unresolved problems,(34) such as ADRBs. Provider frustration related to ADRBs was documented in a variety of ways. Sometimes, punctuation or writing using all capital letters was used in the medical record. These statements were often brief, for example, “Out of all his pain RX!!!” and “Drug seeking behavior - NO NARCOTICS!” Other times, expressive punctuation or capital letters were included in a description of the situation, indicating frustration. For example, when addressing a patient’s lost medication, one provider documented:

> “I already informed her that we will NOT replace the medication prescribed by another physician.”

In another example, a provider combined language recommending not to prescribe an opioid with the word “ever” in all capital letters, conveying frustration with the situation:

> “Violated pain contract with cocaine use. Will not endorse prescribing acetaminophen/hydrocodone EVER.”

In another example, punctuation was used to convey disbelief regarding a patient’s claim that a physician told her that the clinic would prescribe opioids:

> “Patient called this am and walked in this afternoon stating Dr. X told her we would take care of her pain medication!”

In other instances, a tone of frustration was conveyed by a specific comment about the situation. In this example, the provider explained how a patient has not yet tried her pain medication but already called to express her dissatisfaction with being prescribed a low dose. The final sentence conveys the provider’s dissatisfaction with the patient’s approach:

> “I called Ms. X back to verify that she had received the prescription for Lortab 5mg #20. She said she had the prescription but that Lortab 5mg ‘doesn’t work’ for her. I advised that she at least take them as directed. She might be surprised.”

Concern—Providers sometimes expressed concern about potential negative implications or consequences of ADRBs. For example, one provider expressed concern that a patient’s urine drug screen result was “not encouraging”:

> “The notation from Dr. X regarding negative urine drug screens for Methadone and positive for cocaine are not encouraging that he has been compliant with regimens prescribed.”

In another example, the provider reflected that the urine drug screen results make prescribing opioids “difficult to justify”:

> “Seems difficult to justify her current prescriptions given the lack of opiates in her urine from [earlier date] and the presence of non-prescribed benzodiazepines and cannabinoids.”

In other examples, due to concerns related to past behavior, the provider expressed the need for caution or increased monitoring during chronic pain treatment:

> "There is a suspicion she was previously selling her narcotics in the past, so we will need to be careful if we decide to re-prescribe on a chronic basis."

Setting Conditions for Opioid Prescription—Providers described their willingness to prescribe opioids only if certain conditions are met. One provider was willing to potentially prescribe opioids in the future, but would require a urine drug screen first:

> "Discussed that he may require opioids in the future, however, given his history of buying Lortab off the street we would need to develop a trusting relationship. He agreed to check a urine drug screen today."

Other examples highlight the need to be engaged in HIV primary care while receiving opioids for chronic pain:

> "Given he ran out early, no more Lortab today. Next prescription due on [date]. Only 55 pills at that time of Lortab 10. No refills further if does not meet with HIV doctors."

> "Attempted to reach patient … to inform patient that SHE SHALL NOT BE PROVIDED ANY FURTHER REFILLS FOR MEDICATIONS until she is seen at clinic by primary care providers."

Action-oriented discussions and plans—Providers sometimes used concrete, decisive, action-oriented language to describe how they handled, or planned to handle, an ADRB. For example:

> "He is out of the Lortab a bit over 2 weeks into the month. We discussed that this means he cannot get more until his next prescription is due"

In one note, a provider expressed concern regarding potential elder abuse related to opioids, and outlined a detailed plan to address it:

> "[Patient] may no longer receive ANY NARCOTICS from [hospital]. This includes our pharmacy but also any other pharmacy…. She needs an appointment with [counselor] and myself to discuss further. I will inform her of the cancelation at the appointment that is scheduled (if not in the next few weeks please schedule one). I would also like to see if [counselor] will speak with her about elder abuse. I think her family is using her to get narcotics and then stealing them from her."

Providers also documented the consequences that came along with decisive action regarding ADRBs. The following are two examples of the provider documenting the patient's response to discontinuation of opioids and referral to specialists:

> "Patient informed by me that I will not refill his narcotics, at which point patient became angry/hostile including to staff…. Likely depression/anxiety, also borderline/antisocial personality disorder. Refer to [clinic] Psychiatry next visit once his drug-seeking issues/meds are addressed since this is overwhelming our attempt to care for him….When told that his narcotics were not going to be managed in this clinic and that we would be happy to refer him to palliative care/ pain management, he became rather belligerent with nursing and social work staff."

> "Pharmacy staff searched for other prescriptions and found that patient has received Lortabs from several other pharmacies, most recently a 10 day supply on [date]. When confronted, patient offered a story about his wallet being stolen. We did not provide him with any opioid prescription or medications today."

DISCUSSION

To our knowledge, this is the first qualitative analysis of the content of ADRB documentation in any patient population, including individuals with HIV. In this study, we examined both the types of ADRBs documented by providers, and how providers describe these behaviors. The types of ADRBs identified were consistent with ADRB categories described in earlier literature.(9, 11) However, this study is the first exploration of the way in which providers document ADRBs in the medical record. We found that providers used many types of language, including purely descriptive language, but also emotion-laden language that included labeling related to patient intention, frustration, and concern. The implications of this type of documentation for both patients and providers are uncertain.. We also identified a new type of provider activity – setting conditions for opioid prescription, or the willingness to prescribe opioids only if certain conditions are met.

Medical records are relatively permanent documents that stay with patients as they travel through the healthcare system. Additionally, they are increasingly used to communicate between providers, and with certain exceptions, patients have the right to view their medical records.(35) Qualitative research with both patients and providers underscores the importance of documentation that conveys the provider's thought process, but that is also accurate, complete, and understandable.(22) While providers in this study sometimes used descriptive language that conveyed their medical reasoning with regard to ADRBs, emotion-laden language had a strong presence.

The downstream implications of emotion laden language are unknown; our study did not directly address this. However, we can speculate as to potential advantages and disadvantages. Providers may feel that emotion-laden language conveys their level of concern about important issues (e.g., regarding whether or not the patient should be prescribed opioids) and therefore their thought process and global assessment of the situation. Additionally, it may raise awareness of the patient's misuse, abuse, or addiction, and the need for specialized services to address these challenges However, as a provider's interpretation of the ADRB is by its nature subjective, the inclusion of emotion-laden language may further accentuate this subjectivity, and cloud recognition of patterns of patient behavior. Furthermore, the effectiveness of the patient-provider interaction could be compromised if the patient were to read a note in his/her medical record with this type of language. Additionally, individuals with chronic pain, in addition to individuals with HIV, experience stigma.(36) It is possible that using emotional language underscores this stigma and even propagates it.

The implications of emotion-laden language for providers should also be taken into consideration. This study suggests that providers caring for HIV-infected patients with ADRBs experience a wide range of emotion, including frustration and concern. Prior studies

have demonstrated providers' frustration with chronic pain management in general, due clinical uncertainty, lack adequate training and expertise in this area,(37-39) and in particular, HIV providers' lack of confidence in their ability to recognize prescription opioid analgesic abuse.(19) There is also evidence to suggest that the percentage of a primary care provider's panel who are prescribed opioids is inversely associated with provider job satisfaction.(37) Our findings offer a potential explanation. Lack of provider expertise and confidence in this area, perhaps reflected in the emotion-laden comments, could certainly contribute to low job satisfaction, and ultimately, provider burnout.

Of course, providers cannot be expected to remain emotionless as they care for patients.(40) It is important to acknowledge that patient behavior can understandably evoke strong provider emotion including frustration, concern, and labeling about the patient's intention. Providers caring for such patients who experience these emotions should have access to resources to discuss the care of these complex patients and share experiences with others who are facing similar challenges. One example of such a resource is the Prescribers' Clinical Support System for Opioid therapies (PCSS-O), run by the American Academy of Addiction Psychiatry. PCSS-O provides peer mentoring services for providers across the US (http://www.pcss-o.org/peer-support). Seeking this type of support while caring for patients with ADRBs may improve the provider experience, and ultimately, patient care.

We also identified a provider activity previously suspected(17) but to our knowledge not definitively identified in the chronic pain literature – setting conditions for opioid prescription. Others have found preliminary qualitative evidence that HIV providers fear their patients will stop being engaged in care if they do not prescribe opioids for chronic pain. Furthermore, there is evidence from our group that HIV-infected patients with chronic pain who also have addiction are actually more likely to be retained in HIV primary care.(41) We included three examples of providers who were potentially willing to prescribe or refill opioids only if the patient was willing to do something in return (see an HIV primary care provider, provide a urine drug screen). Whether this is an effective approach is unknown. However, it reflects a concept of growing importance in understanding patient-centered care: treatment prioritization.(42, 43) Recent studies suggest that patients prioritize pain, while providers prioritize other primary care concerns.(17) The condition-setting described here may represent the primary care provider's attempt to ensure that in individuals with ADRBs, in addition to pain management and opioids, other HIV primary care concerns are still being addressed, and opioids are being prescribed safely.

This discussion then begs the question: what constitutes safe, evidence-based care for individuals with ADRBs? This is a challenging question for several reasons. First, the implications of ADRBs are uncertain. Although strong evidence is lacking, some have attempted to categorize ADRBs as major (diversion, lost/stolen opioids, multiple providers) and minor (running out early, focus on opioids).(17) The presence of a major ADRB, or the repeated occurrence of minor ADRBs, are considered to be more concerning than an isolated minor ADRB, that could potentially be a misunderstanding on the part of the provider. Second, as others have recently noted,(21) evidence-based guidelines or protocols for addressing ADRBs have not been developed. Despite this uncertainty, our study found

evidence of a variety of provider actions, including pain and addiction specialist referrals, and opioid discontinuation.

It is not always easy to know what ADRBs mean, or how to respond to them, especially in the context of a complex chronic disease such as HIV. Although this study was not able to directly investigate this question, it is possible that non-systematic, non-uniform, sometimes emotional documentation of ADRBs may complicate ADRB management. When a uniform tool for documentation of ADRBs is not used, and provider language varies widely and emotion features prominently in the description, patterns of ADRBs may be difficult to discern. Aberrant drug related behaviors, which by definition are somewhat subjective, may be even more subjective. Therefore, how these behaviors are recorded is critically important. Therefore, we propose that ADRBs should be documented as factually as possible, with sufficient detail to understand the reason that the provider suspects ADRB, devoid of provider emotion. In addition, further investigation into tools that may facilitate such systematic, uniform documentation is needed.

This study has limitations. This study used manual chart review and despite our systematic approach, it is possible that some documented ADRBs were missed. Our sample size was small and limited to patients at a single HIV/chronic pain clinic, which may limit generalizability, and future research in other settings is needed. Because data about ADRBs was obtained from a cross section of provider notes, the patients' perspective is notably absent, and we were unable to analyze providers' long-term responses to ADRBs. Similarly, provider perspectives were only obtained by their documentation in the medical record. This is a proxy for the emotional state of providers—chart-prompted interviews of providers would offer a complementary perspective. Prior research suggests that the medical record also may not accurately reflect pain management actually provided. Our study allows us to comment only on documentation, not care provision.(44)

In sum, ADRB documentation by providers caring for HIV-infected patients with chronic pain contained a variety of types of language, including emotion-laden language. This type of ADRB documentation may have important implications for both patients and providers. As ADRBs are themselves subjective, and their documentation may have important consequences for patient care, we assert that it is important to document the events observed as descriptively and dispassionately as possible. Development of instruments that can be used to facilitate improved ADRB documentation, as well as evidence-based approaches to addressing ADRBs, is needed.

Acknowledgments

The authors wish to acknowledge Elizabeth Molony and Brian Alan Perry for their careful chart abstraction of aberrant drug-related behaviors.

Sources of support: This research was supported by the University of Alabama at Birmingham (UAB) Center for AIDS Research CFAR, an NIH funded program (P30 A1027767) that was made possible by the following institutes: NIAID, NCI, NICHD, NHLBI, NIDA, NIMH, NIA, FIC, and OAR.

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Table 1

Comparison Individuals in the HIV/chronic pain clinic with aberrant drug related behaviors and the HIV/chronic pain clinic overall

Variable*	With aberrant behaviors (N=37)	Without aberrant behaviors (N=100)	p-value
Age (median, IQR)	44 (37-49)	44 (39-50)	0.66
Non-white race	18 (49%)	45 (45%)	0.85
Female	15 (41%)	25 (25%)	0.09
Transmission Risk Factor			0.04**
-Heterosexual	19 (51%)	32 (32%)	
-Intravenous drug use	10 (27%)	22 (22%)	
-Men who have sex with	8 (22%)	45 (45%)	
men	0 (0%)	1 (1%)	
-Other/unknown			
Insurance			0.80
-Private	4 (11%)	16 (16%)	
-Public	23 (62%)	57 (57%)	
-None	10 (27%)	27 (27%)	
CD4 (median, IQR)	327 (177-620)	386 (226-662)	0.60
Viral loadundetectable	21 (57%)	54 (55%)	0.85
Pain (EuroQOL moderate/severe)	24 (80%)	72 (77%)	1.0
Functional impairment (EuroQOL, somewhat/unable to perform)	17 (55%)	41 (44%)	
-mobility	2 (7%)	12 (13%)	0.31
-self-care	16 (53%)	47 (51%)	0.51
-usual activities			0.83
Depression (PHQ-9 ≥ 10)	10 (32%)	33 (36%)	0.83
Anxiety (PHQ-Anxiety=anxiety symptoms, panic)	10 (32%)	30 (33%)	1.0
Substance use (ASSIST)			0.53
-current	3 (10%)	5 (5%)	
-prior	15 (50%)	53 (58%)	
-never	12 (40%)	34 (37%)	

Variable*	With aberrant behaviors (N=37)	Without aberrant behaviors (N=100)	p-value
Psychiatry/psychology visit	27 (73%)	74 ((74%)	1.0

*Missing data: Race = 1, CD4 = 1, VL = 1, EuroQOL Pain = 14, EuroQOL Mobility = 13, EuroQOL Self-Care = 15, EuroQOL, Usual Activities = 14, PHQ-9 = 15, PHQ-Anxiety = 14, ASSIST = 15.

**p-value < 0.05

Table 2

Types of Aberrant Drug Related Behaviors (ADRBs) s Identified in Content Analysis and Illustrative Quotes

Type of ADRB	Illustrative quote(s)
Patients requesting opioids, including requests for specific opioids or dosages	"She is requesting narcotics in a very roundabout and confusing way (she is 'allergic' to various alternatives such as Tylenol, Ultram, etc)" "He repeatedly mentions that he has 'a high tolerance to medications' and that 'the only thing that works is Lortab."
Obtaining non-prescribed opioids	"Mr. X left sick call after seeing Dr. Y and did not have prescriptions filled for Ultram or Flexeril. He states that he will look for someone to buy some Lortabs from." "Has been taking his sister's Lortabs, but now she needs them for pain."
Emergency room visits related to opioids	"Since her visit she has been to [local community] ER 'since you didn't give me any pain medicines' and was given an injection of Dilaudid [opioid]."
Patient emotion related to opioids	"He demanded [social worker] get him co-pays for methadone (and swore at her in [clinic] lobby)." "I spoke with [patient], and he was very upset and agitated. He said that he couldn't wait until [later date] for pain medication; if he had to wait that long, he would just go ahead and 'shoot his brains out'."
Lost/stolen opioids	"Recently returned from [nearby city] where he left his pain medication and tenofovir [HIV medication] and asks for refills of both." "She reports argument with her son who 'stole medications from her purse.'"
Running out of opioids early	"He states that he is out of his oxycodone because he has been having so much breakthrough pain that he frequently has to take more than one pill a day."
Inconsistent urine drug screens (negative for opioid, positive for illicit substance, or both)	"Unfortunately urine drug screen done [date] was positive for cocaine. It was negative for opiates and benzodiazpines, even though she is supposed to be both on Lortab and Klonopin. Ms. X does have a past history of cocaine abuse. Despite the positive test, she denies using cocaine and says it must have been positive because a roommate smoked crack around her."
Multiple opioid prescribers	"[Health department] inquiry reveals patient received script for short acting meds Hydrocodone from other MD (Dr. X) on [date] and [date] despite signing opioid contract with this clinic."
Illicit substance use	"In care with a pain clinic that prescribes Suboxone [opioid agonist-antagonist used to treat addiction] and Lortab 7.5mg #90 per month. Using prescription drugs (Oxycodone). Admits he is hiding drug use from his mother."
Patient threats related to opioids	"Told 2 nurses he would buy street drugs since I didn't give him narcotics." "I was informed by social worker that Ms. X has been seen selling her Lortab in front of the place where she currently lives. Our interaction was short but long enough for me to tell Ms. X that we will no longer prescribe Lortab. She became angry, said she would still get if off the street and left."
Patient selling opioids ("diversion")	"The patient is aware that documentation in chart from previous providers described diverting behaviors. Because of this documentation we decided to treat Mr. X condition with long acting medications (fentanyl patches with gradual dose increase, now on 50mcg/hr)."