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How do clinicians of different specialties perceive and use opioid risk mitigation strategies such as opioid prescribing contracts, prescription drug monitoring programs, and urine drug tests? A qualitative study

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Abstract

Background: In response to the opioid crisis, states and health systems are encouraging clinicians to use risk mitigation strategies aimed at assessing a patient's risk for opioid misuse or abuse: opioid agreements, prescription drug monitoring programs (PDMPs), and urine drug tests (UDT).

Objective: The objective of this qualitative study was to understand how clinicians perceived and used risk mitigation strategies for opioid abuse/misuse and identify barriers to implementation.

Methods: We interviewed clinicians who prescribe opioid medications in the outpatient setting from 2016-2018 and analyzed the data using Constructivist Grounded Theory methodology.

Results: We interviewed 21 primary care clinicians and 12 specialists. Nearly all clinicians reported using the PDMP. Some clinicians (adopters) found the opioid agreement and UDTs to be valuable, but most (non-adopters) did not. Adopters found the agreements and UDTs helpful in treating patients equitably, setting limits, and having objective evidence of misuse; protocols and workflows facilitated the use of the strategies. Non-adopters perceived the strategies as awkward, disruptive to the clinician-patient relationship, and introducing a power differential; they also cited lack of time and resources as barriers to use.

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Conclusions: Our study demonstrates that clinicians in certain settings have found effective ways to implement and use the PDMP, opioid agreements, and UDT but that other clinicians are less comfortable with their use. Administrators and policymakers should ensure that the strategies are designed in a way that strengthens the clinician-patient relationship while maximizing safety for patients and that clinicians are adequately trained and supported when introducing the strategies.

Keywords

opioids; urine drug testing; primary care; pain medicine; qualitative

Introduction

Identifying the misuse and abuse of prescription opioids is important for the prevention of substance use disorders and drug overdoses (Centers for Disease Control and Prevention, 2016; Dowell, Haegerich, & Chou, 2016; Substance Abuse and Mental Health Services Administration, 2013). Three primary strategies have been promoted to assist clinicians with setting expectations about opioid prescribing and identifying individuals at risk for opioid abuse (Centers for Disease Control and Prevention, 2016; Chou, 2009; Substance Abuse and Mental Health Services Administration, 2013). These include opioid contracts, Prescription Drug Monitoring Programs (PDMPs), and urine drug testing (UDT). Opioid contracts (sometimes referred to as agreements) list conditions to which patients must agree to in order to receive opioid prescriptions. PDMPs are state-based databases documenting the dispensation of controlled substances and can assist clinicians in identifying individuals receiving opioids from multiple providers or receiving other controlled substances that increase the risk of opioid overdose (Ali, Dowd, Classen, Mutter, & Novak, 2017). UDTs are used to detect whether patients are taking prescription opioids as indicated and/or to screen for illicit or controlled substances (Argoff et al., 2018).

Risk mitigation strategies have been posited to provide important contextual information, as clinicians often rely on their own perceptions of risk when prescribing opioids, potentially missing patients who are misusing these medications (Dowell, et al., 2016; Krebs et al., 2014; Lewis and Trafton, 2011). Relying on perceptions of which individuals are likely to misuse or abuse controlled substances has led clinicians to overuse risk mitigation strategies such as UDTs on Black patients and underuse them on White patients, despite higher rates of prescription opioid misuse among White patients (Becker et al., 2011; Hausmann, Gao, Lee, & Kwoh, 2013; Korneeva et al., 2018). While examining racial disparities regarding the use of risk mitigation strategies was not the explicit focus of this study, we were interested in learning more about how clinicians justified when they did or did not use specific risk mitigation strategies or if they cited the use of “gut feelings,” as others have found.

The evidence on whether risk mitigation strategies are effective in decreasing patients’ risk of misuse, abuse, or overdose is limited and mixed (Appendix Table 1) (Dowell, et al., 2016; Fink et al., 2018; Klimas et al., 2019; Joanna L. Starrels et al., 2010). Even so, due to the need to respond urgently to the opioid crisis, these strategies are currently being integrated into quality improvement measures and state legislation (Centers for Disease

Control and Prevention, 2016, 2018; Chou, 2009; McBane and Weigle, 2010; National Conference of State Legislatures, 2018; Joanna L. Starrels, et al., 2010; Winstanley et al., 2018). Although the CDC guidelines explicitly recommend the use of UDT and PDMPs, the authors noted that there are were no studies evaluating the effectiveness of written agreements (Dowell, et al., 2016). Since then, a 2019 systematic review found weak evidence of their effectiveness to reduce opioid use and misuse (McAuliffe Staehler and Palombi, 2019). The CDC guidelines recommend that clinicians and patients set a plan in advance to clarify expectations about opioid prescribing. Many providers use written agreements or contracts for this purpose.

Previous studies have analyzed the use of these strategies independently, examining their use in the emergency department and primary care settings (Hariharan, Lamb, & Neuner, 2007; Hildebran et al., 2014; Kilaru et al., 2014; Krebs, et al., 2014; Leichtling et al., 2017; Mastarone et al., 2020; J. L. Starrels et al., 2014). Time pressures, inadequate resources, and discomfort with playing a law enforcement-like role have been identified by clinicians as barriers (Krebs, et al., 2014; Mastarone, et al., 2020; Toye, Seers, Tierney, & Barker, 2017). However, less is known about how clinicians use these strategies collectively, substituting or favoring one strategy for another. Moreover, few have examined their use in settings outside of primary care and pain clinics in which opioids are commonly prescribed. Comparing how clinicians who prescribe opioids in different settings use these strategies can provide insights into common barriers and highlight areas where implementation has been most effective. Specifically, this study adds to the literature in the following ways: (1) providing perspectives on all three risk mitigation strategies and which – if any – strategies clinicians are likely to use, alone or in concert; (2) examining how clinicians in different settings – e.g., urgent care, pain clinics, primary care, specialty clinics – are using the strategies and how their use may vary by setting; and (3) confirming barriers and facilitators that others have found and seeking to identify new ones by specialty or setting.

The objective of this study was to examine perceptions and the use of these risk mitigation strategies. Specifically, our research questions were: How do clinicians in varying outpatient specialties perceive opioid risk mitigation strategies? What are the barriers and facilitators perceived by clinicians in the implementation of these strategies?

Materials and Methods

Study Design

To understand how clinicians perceived and used risk mitigation strategies, we conducted in-depth interviews with clinicians affiliated with an academic medical center from July 2016 to February 2018. We used Constructivist Grounded Theory (CGT) methodology to guide analysis (Charmaz, 2014).

Study Setting and Participant Selection

This study took place in various outpatient settings associated with a health system across a large metropolitan area in Southern California, including primary care clinics, a multidisciplinary pain center, academic medical center departments, and private primary

care and specialty practices. During the study period, the use of the three strategies was voluntary; in October 2018, the use of the PDMP became mandatory in California. The study was reviewed and approved by the institution's IRB. We used a flexible, purposive sampling approach to recruit study participants (Marshall, 1996; Robinson, 2014), focusing on clinicians treating patients with chronic pain and prescribe pain medications. For our study, study participant characteristics (e.g., practice setting, specialty, demographics) were used to explore potential variation in experiences and perceptions (Marshall, 1996; Robinson, 2014). We aimed to interview clinicians from internal medicine, rheumatology, anesthesiology, neurology, and other pain medicine clinicians (e.g., dentists who focus on pain medicine). Throughout our interview process, if a study participant mentioned another clinicians' prescribing approach, we attempted to interview the other clinician (maintaining the confidentiality of the first clinician and omitting any references to her/his/their name). We emailed clinicians individually and followed up one time via email.

Data Collection

We developed a semi-structured interview guide for the first set of interviews and refined it for subsequent interviews as we analyzed initial data (Charmaz, 2014). The interview guide (Appendix 1) covered topics including the clinician's approach to treating pain, prescribing guidelines, communication with patients around opioids, and perceptions and use of the risk mitigation strategies. Interviews lasted 45-120 minutes. Clinicians were paid $250 for participation. We audio-recorded the interviews, and they were transcribed verbatim. Two authors (MSK and AJ) conducted all of the interviews together, with the exception of four interviews, where logistics made it challenging for both authors to attend the interviews together.

Data Analysis

Following CGT methodology, all codes and categories were derived from the data. One author (MSK) performed all of the coding; the codes were reviewed and discussed with two other authors (AJ and MVH). We gained analytic direction for our study after coding approximately 10 interviews using line-by-line process coding (Charmaz, 2014; Saldana, 2009). At this point, we identified the most frequently occurring and significant codes. We elevated these initial codes to focused codes, which are more selective and conceptual than initial codes. We then coded the transcripts through an iterative process; if new codes were identified in a subsequent transcript during the coding process, we re-coded the transcripts as needed (Charmaz, 2014; Corbin and Strauss, 2008). We used the various constant comparison techniques described in Corbin and Strauss (2008), contrasting how clinicians of different specialties and in different clinical settings used the strategies. When we felt that the categories reached theoretical saturation (Charmaz, 2014), i.e., they were fully developed and fleshed out, we concluded our interviews.

Results

We emailed a total of 167 clinicians; 33 clinicians of different specialties who prescribed opioid medications in the outpatient setting responded (Table 1). One internal medicine clinician was interviewed, but only practiced in the inpatient setting, so this data was

excluded from this analysis. Our final sample size was 32 clinicians. Our study participants included clinicians recently out of residency to clinicians with 40 years of experience. To protect the identities of study participants, we obscured their gender.

Nearly all clinicians reported using the PDMP. For the other strategies – the opioid agreement and UDT – we identified two populations of clinicians: Adopters, who found them useful and valuable, and Non-adopters, who found them awkward and disruptive. We detailed their reasons for these perceptions below and summarized the categories in Table 2.

1. Reasons why Adopters embraced the risk mitigation strategies

1.1 Allowed for equal treatment of patients—Adopters reported that using the strategies for every patient was more equitable. The strategies provided objective evidence and reduced the possibility of falsely accusing a patient of drug-seeking or overlooking an individual at risk for misuse. One clinician noted that they used the strategies because they had been "taught that you can't tell the book by the cover." They continued:

> You have to be… non-judgmental and sympathetic… I think that's where it helps to have these uniform rules like I check the [PDMP] almost every time, pretty much every time. I don't assume. I do that urine tox screen and look to see that it's in the urine what you're prescribing. [family medicine, primary care]

1.2 Facilitated setting of boundaries—Adopters often noted the risk mitigation strategies made their jobs "easier" and gave them organizational cover to follow their clinical judgment or personal policies. A clinician noted:

> [The opioid agreement] makes it a little easier because we can tell patients they are only supposed to have one provider who's providing their chronic pain medication, there's certain classes of pain medications that we don't prescribe from the urgent care setting, and then now with the [PDMP] system in place, it's very easy to find out kind of the background of a patient's opiate prescribing or filling medications. [internist, urgent care]

Adopters noted they were comforted that the responsibility for deciding to use these strategies was shifted to organizational policy or the government. This allowed them to set limits with patients without appearing to be a non-empathetic clinician. When patients asked why they used strategies such as the PDMP, one clinician said they replied:

> 'Look, as a policy for our center, this is what we do, and that's our philosophy, and this is why we do it, and now it's the government's philosophy.' And I think they're more likely to go along with that and not question as much, especially when you say we need to check on your opiate use on [PDMP], and the government is watching things more closely because of this crisis. [pain specialist, pain clinic]

1.3 Provided a way to provide evidence of misuse, abuse, or diversion—Adopters noted how the PDMP and UDT results helped them present objective evidence of misuse or abuse to patients. When finding evidence of multiple prescribers in the PDMP, one clinician said they pointed directly to the report:

> First of all, you can show them, 'Here. Don't lie to me. This is the list of the doctors, the pharmacy [that gave you that prescription].' So you have a documentation. It's not like arguing with them if they used it. So, yeah, it was very helpful. [pain specialist, pain clinic]

Adopters stressed that having objective evidence from the strategies (e.g., PDMP or UDT) allowed them to make informed decisions about prescribing or keeping patients within their practice. One clinician working in the pain clinic reported discharging three patients within one week because of UDTs that came back without the presence of an opioid. These results indicated that the patients might have been diverting their prescription opioids. With this evidence, the clinician sent letters to patients informing them that they were being discharged from the clinic and that the clinician would no longer be continuing their opioid medications.

1.4 Routine and systematized protocols made use seamless—Adopters in pain centers and urgent care settings described a protocolized system where the risk mitigation strategies were standardized, routinely used, and where administrators encouraged their use. Nursing staff discussed the opioid agreements with patients, eliminating the need for physicians to do so. Urgent care clinicians also described having a routine for checking the PDMP. One internist described how they prepared for visits by checking the chief complaint from the medical assistant, and if the chief complaint included a diagnosis such as low back pain, they would look up and print the PDMP report and discuss it with the patient:

> I can show them, 'Look, I'm mandated to run this report if I'm going to prescribe these classes of medications, I can see that you've had it filled from this many providers, and this was the most recent time, and this was the number of pills you were given.' If I'm upfront from the beginning with patients, they know that we're going to start out with that baseline of transparency, and they're going to be less likely to hide the real story… [internist, urgent care]

This internist preferred being armed with the PDMP report before walking into the room to be able to have a frank conversation with the patient from the start, which prevented an uncomfortable confrontation later in the visit:

> It's been times maybe even before we started rigorously checking [the PDMP], where a patient would tell you a story, and it just seemed a little off, and then you would go run the [PDMP] report and then when you go, and you kind of have a confrontational relationship with that patient… so it's not a good place in the patient-physician relationship at that point. Whereas, if we just set the stage right off the bat, 'Look, I have to run this report when you're prescribed these medications,' and they know that I can see all of that ahead of time, it's a different conversation and often a much easier conversation. [internist, urgent care]

2. Non-adopters and barriers to use of the opioid risk mitigation strategies

2.1 Disruptive to the patient-clinician relationship—For non-adopters, the PDMP felt the least adversarial and was the one strategy several Non-adopters reported using regularly. Using the PDMP requires no interaction with the patient unless there are troubling

findings. One primary care clinician generally used the PDMP because they felt it gave the clinician objective evidence, rather than drawing on impressions about a patient:

> Usually, I just draw the line at the [PDMP]. These are folks who have had opioid misuse issues… the proof is going to be in their actions, not in their words, not in the way that they dress, not in their other concurrent issues. [family medicine, primary care, and urgent care]

In contrast, Non-adopters were uncomfortable using the opioid agreement and UDT, perceiving that the strategies would upset established relationships. Non-adopters perceived that these strategies treated all patients with distrust or as "drug addicts." Conversations about the opioid agreement, particularly with patients who had been receiving opioids for many years, felt awkward and uncomfortable – "a pain in the butt." One internist [primary care] said they were "embarrassed" to give the opioid agreement to patients, feeling uneasy about the "obnoxious" bold print used throughout the agreement. Another internist [primary care] described an interaction where a patient got "very upset" and was "really offended" when the clinician introduced the pain agreement. The internist described the patient's reaction to the agreement: "you think I'm going to become a drug addict or something or abuse this."

The nature of UDT also bothered several Non-adopters, as it implied a lack of trust of their established patients. One internist said:

> I don't need to do a tox screen on my patient that I've known for 15 years who's got a lovely wife and an established business, who's got terrible arthritis in his knee, and he can barely walk down the hall, and I see him [in] agony every step he takes. [internist, primary care]

2.2 Unnecessary given close relationships—Non-adopters reported that the risk mitigation strategies felt superfluous for three reasons: they knew their patients well, they felt confident in their ability to detect misuse or abuse, and they did not perceive that they had abusive patients in their practice. Non-adopters contended that the long-term relationships they formed with patients gave them enough information to make decisions about patients' risk for misuse or abuse. They relied on identifying troubling patient behavior, such as repeated calls for early refills or aggressive behavior with medical staff to detect if the patient was at risk for misuse or abuse. In fact, Non-adopters often described that, if they felt the need to use strategies such as UDT or the pain agreement, it was a signal that the patient-clinician relationship was damaged. At this point, they preferred to refer the patient out to another clinician. One internist explained:

> I personally do not have them sign a contract and all the stuff that pain specialists do. That's kind of why I want [pain specialists] on my team because honestly, I just don't have the time to go through all that, and if I feel that there's somebody breaking that verbal relationship or trust, I'm sending them to pain medicine anyway. [internist, primary care]

Similarly, rheumatologists who were non-adopters said they did not use the opioid agreement or UDT but referred patients who they deemed at high risk of misuse out to either

primary care clinicians or pain specialists. One rheumatologist explained that they viewed the need to use UDT as a reason to refer the patient out because the trusting relationship was broken:

> I do not do urine drug testing. If I reach a point where I need to do urine testing, I'm not believing someone's story, I'm referring them out to a pain clinic.

Non-adopters described workarounds to detect potential diversion or misuse, including examining previous records or questioning dubious requests. They reported feeling confident in their ability to detect misuse or abuse. One internist explained: "I've got a pretty good sniffer as to who's bullshitting me and who's not" [primary care]. Several clinicians described how they listened for suspicious requests from patients, including mentions of allergies to non-opioid analgesics. One internist said:

> They'll tell me, "no, I tried that medicine, this medicine had side effects, I was allergic to that, but I kind of like this medicine." Sometimes they'll fumble with the name a little bit… "oxy-crodon" or something." [internist, primary care]

Additionally, we found a consistent perception among Non-adopters in our sample that they felt it was not *their* patient population abusing these medications, and therefore the risk mitigation strategies were unnecessary. "I don't have those types of patients," explained one internist [primary care]. One rheumatologist used language that was repeated over and over by several clinicians. Referring to whether they used the PDMP, they said:

> Honestly, I haven't needed to. I really have not been in a position certainly in the past 4 or 5 years where I've felt like somebody's using a lot of drugs and maybe doctor shopping. [rheumatologist, specialty care]

This clinician also felt that they didn't need to use the opioid agreement because they didn't have "any patients in my current practice who I've found to be abusive of the privilege."

2.3 Introduced a power differential or did not directly benefit the patient—

Non-adopters perceived the strategies to be non-beneficial to patients. Instead of a written opioid agreement, which they felt introduced a power differential, Non-adopters used workarounds such as verbal discussions with patients to outline the risks and expectations for taking opioids. A family practice clinician formerly used opioid agreements but stopped using them because they felt that:

> A lot of folks don't want to sign the agreement because again, it's kind of like admitting, 'Hey, you're the boss. You have all the power. I'm giving everything up.' All the terms in the agreement are for my benefit. There's nothing in there for their benefit, so they really do feel like they're signing everything away. [family medicine, primary care, and urgent care]

Requiring UDT that did not provide additional benefit to the patient also gave non-adopters pause. One clinician felt that they weren't adequately administered with the patient's full consent and were unethical. Another clinician felt that using sophisticated UDT could be too costly for patients. Non-adopters also expressed concern that patients were already stigmatized for taking opioids and didn't want to introduce strategies that further stigmatized patients.

2.4 Difficult to implement given the lack of time, protocols, and incentives—

A few Non-adopters viewed the risk mitigation strategies positively but reported barriers to implementation, including lack of time, protocols, and resources. Several clinicians contrasted the lack of an integrated workflow to the clear protocols that had been developed for treating patients with diabetes or hypertension. Clinicians reported that the pain agreement was difficult to find within the electronic health record, and it was difficult to determine whether the patient had already signed one with another clinician.

Protocols and policies also appealed to clinicians because they allowed them to depersonalize the decision to use the strategies. One primary care internist described that they would prefer "making [the pain agreement] standard so that we don't feel bad asking a patient to sign an agreement. We can say, 'Listen, this is policy, and this is what we need to do.'" Clinicians also often mentioned that they didn't know when to use the risk mitigation strategies, as it was sometimes difficult to assess when a patient had developed chronic opioid use, particularly when the initial prescription was for a surgery or an acute injury.

In the primary care setting, limited time, lack of incentives, and inertia were also identified as barriers. Integrating a discussion involving the opioid agreement – a multiple-page document – into a rushed primary care visit was challenging. Going over the agreement often took as long as 40 minutes, far longer than the time allotted for visits. One internist said they would use the opioid agreement more often if there was a clear workflow where clinical staff could begin the conversation. The lack of incentives also played an important role for some Non-adopters. One internist regularly checked to see how they were doing in areas such as blood pressure checks and diabetes goals, but "at the end of the year when you receive your pay plan, and someone looks at how well you're doing, there is no similar quantification of care for pain." Finally, inertia played a role for some. Several primary care clinicians who had been in practice for many years reported that they did not use the PDMP, finding it difficult to use. They resorted to workarounds to detect aberrant behavior, such as checking the chart or relying on cues about the person's demeanor.

Discussion

In this qualitative study using a sample of clinicians practicing in outpatient settings, we found that nearly all clinicians used and accepted the PDMP. However, we found that one group of clinicians, whom we refer to as "Non-adopters," did not widely accept UDT and opioid agreements. Non-adopters described several barriers to the use of UDT and the opioid agreements, including concerns about the disruption of the patient-clinician relationship, lack of usefulness of the strategies, lack of benefits for patients, and lack of protocols, time, and incentives. "Adopters," on the other hand, largely accepted and used UDT and opioid agreements, found them useful and valuable, as they allowed them to point to objective evidence when setting boundaries with patients and treating patients equitably.

Certain settings were more conducive toward the use of the strategies: for example, primary care clinicians and rheumatologists were often more uncomfortable using the strategies, citing the potential for the risk mitigation strategies (particularly UDTs and the opioid contracts) to disrupt the patient-clinician relationship. In urgent care and pain medicine

clinics, where there is less continuity of care, clinicians felt more comfortable using these tools. Clinicians working in one pain clinic setting referred to management that was supportive and protocols and resources for the implementation of the strategies. In contrast, primary care clinicians who embraced the strategies felt that the lack of protocols, time, and resources allocated to implementing these strategies hindered adoption, findings that others have identified as well (Albrecht et al., 2015; Chaudhary and Compton, 2017; Krebs, et al., 2014; Joanna L. Starrels et al., 2011). To reduce barriers to implementation, trained clinical pharmacists, nursing staff, or medical assistants could review the agreements with patients.

Our findings have important implications for clinicians, administrators, and policymakers. Some clinicians voiced concerns about how the opioid agreements could introduce a power differential between patients and clinicians; others have found similar perceptions (J. L. Starrels, et al., 2014). Our findings lend support to concerns raised by critics of the opioid agreement, who note that the agreements as currently used may impede or harm the therapeutic relationship between patients and providers (Buchman and Ho, 2013; Chapman, dela Cruz, & Hutto, 2016; Collen, 2009; Kaye et al., 2014). There have been efforts to make the agreements more patient-centric, which could encourage important conversations about the use of opioids (Ghods, Schmid, Pamer, Lappin, & Slavin; Tobin, Keough Forte, & Johnson McGee, 2016; Wallace, Keenum, Roskos, & McDaniel, 2007). For example, opioid contracts could be redesigned to be less asymmetrical to reduce the power imbalance, listing the responsibilities of the patient and the clinician. Clinicians might also be trained on how to introduce UDT and the PDMP as patient safety tools instead of enforcement tools that lead to breaking a “contract.” We also found that some clinicians used the opioid contracts to rapidly taper patients off opioids in a non-consensual manner, which many have argued is unethical and can result in severe withdrawal symptoms (Rich et al., 2020; Rieder, 2020).

Non-adopters in our study revealed their values as they spoke about reasons for not using the strategies, citing concerns about power differentials and not wanting to further stigmatize patients. In 1996, Klein and Sorra introduced a model to explain key determinants of implementation effectiveness (Klein and Sorra, 1996). Within this model, one important determinant is whether there is a perceived fit between the innovation and the values of those implementing the innovation. When the innovation-values fit is poor, there may be resistance or lackluster compliance even where the organization is committed to implementation. In our study, when clinicians perceived that certain opioid risk mitigation strategies conflicted with the patient-clinician relationship or introduced a power differential, they found workarounds or complied only partially. Without meaningful buy-in, risk mitigation strategies could become perfunctory tools instead of leading to thoughtful conversations about the risks of opioids. Effective training could show clinicians how to use what Wyse et al. have described as “verbal heuristics,” or shortcuts to use when having difficult conversations about opioid safety (Wyse, Ganzini, Dobscha, Krebs, & Morasco, 2019). For example, Wyse et al. found that clinicians find it easier to tell patients that the use of the risk mitigation tools is standard across all patients, that they like to set expectations or “ground rules” about opioid prescribing before any prescription, or that the health system or other larger power (e.g., federal government) is requiring the use of these tools (Wyse, et al., 2019). Indeed, we found that many Adopters in our study were already using these verbal heuristics.

UDT was also identified as potentially problematic by some clinicians in our sample. Clinicians noted that samples sent out to laboratories could result in high costs for patients and payors. One 2011 estimate of total costs for a patient receiving two urine drug tests per year – once every six months – could be between $422 to $726; for patients getting tested every month, total costs could be as high as $4,356 (Laffer et al., 2011). There is some concern that incentives could lead providers to overuse UDTs; urine drug testing has become a lucrative practice for pain management clinicians who operate their own labs (Schulte and Lucas, 2017). Research is urgently needed to create better guidelines for UDT. Others, including one clinician in our sample, have also argued that current UDT practices do not require explicit informed consent, which could lead to patients feeling misled if confronted about the results (Warner, Walker, & Friedmann, 2003). Clinicians explicitly discuss the role of UDT for patient safety reasons, for example, for identifying potential drug-drug interactions.

As with other qualitative studies examining the risk mitigation strategies (Krebs, et al., 2014), many Non-adopters preferred to rely on gut feelings. As the clinicians in our sample overwhelming serve insured patients, several clinicians in our study perceived that they did not have patients in their practice who misuse prescription opioids. While researchers have consistently found an association between prescription opioid use misuse and lower socioeconomic status (Bali, Raisch, Moffett, & Khan, 2013; Chang, 2018; Nicholson, 2020), individuals across the socioeconomic gradient are vulnerable to developing substance use disorders. Clinicians could risk missing early signs of a substance use disorder or could risk being overly restrictive with patients at a lower risk.

Our study has limitations. We interviewed clinicians who mostly see middle-to-high socioeconomic status patients in California, which may limit the transferability of our findings. We could not examine documented adoption of the strategies; future mixed methods research could examine both documented use and perceptions. Other risk mitigation strategies include pill counts, prescription days' supply limits, using tools such as the Opioid Risk Tool. As these are less commonly used, we opted not to include them in this study. Our interview guide was broad and loosely structured; we often followed up with more specific questions about the use of the strategies and their perceived effect of the patient-clinician relationship and barriers and facilitators to their use when discussing the use of the strategies, but the broad nature of our questions may have limited our ability to obtain data for some participants.

In conclusion, given the risks of opioid medications and their potential for abuse, clinicians need effective tools to communicate the risks and benefits of opioids to patients and assess risk of opioid misuse. Our study demonstrates that clinicians in certain settings have found effective ways to implement and use the PDMP, opioid agreements, and UDT but that other clinicians are less comfortable with their use. Administrators and policymakers should ensure that the strategies are designed in a way that strengthens the clinician-patient relationship while maximizing safety for patients and that clinicians are adequately trained and supported when introducing the strategies.

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Data availability statement:

Given the qualitative nature of the data, the data is not available for public dissemination for this study.

Appendix 1

Appendix Table 1.

Description, Implementation, and Evidence of Risk Mitigation Strategies

Risk Mitigation Strategy	Description	Evidence Base	Use
Opioid Agreement	Agreements or contracts that outline expectations of how opioids will be prescribed and monitored.	Weak, limited evidence that opioid agreements reduce misuse (Joanna L. Starrels, et al., 2010).	Widely used (Fishman, Bandman, Edwards, & Borsook, 1999). Included in the 2016 CDC guidelines (Centers for Disease Control and Prevention, 2016).
Prescription Database Management Programs (PDMPs)	State monitoring programs that track controlled medications dispensed from pharmacies.	Mixed evidence on their effectiveness, likely resulting from heterogenous state programs and implementation (Finley et al., 2017). Evidence of reduction of multiple prescribers per patient, decrease in monthly quantity of opioids dispensed, and total opioids dispensed (Finley, et al., 2017; Winstanley, et al., 2018).	49 states have implemented PDMPs and at least 34 states are now requiring prescribers and/or dispensers to check the databases before prescribing (National Alliance for Model State Drug Laws, 2016).
Urine Drug Testing (UDT)	Clinicians use UDT to look for the presence of the prescribed controlled medication as evidence of use. UDT can also be used to detect the presence of illicit or non-prescribed controlled medications.	Weak, limited evidence that UDT reduces misuse, overdose, or diversion (Argoff, et al., 2018; Joanna L. Starrels, et al., 2010).	Widely used and recommended by professional medical societies and the CDC (Chou, 2009; McBane and Weigle, 2010).

Appendix 2.: Sample Questions From Semi-Structured Interview Guide

1. What does the typical assessment look like for someone’s first-time pain-related visit? What about a follow-up visit?
    a. PROBE Can you guide me through what happened at a recent office visit for a patient who came in for pain?
2. What are the main factors that influence your decision to prescribe opioid medications?
3. Upon prescribing an opioid pain medication for the first time to a patient, what kind of discussion do you have with them?

   a. PROBE Could you give me an example of a recent conversation that you had with a patient?

4. What do you think about the PDMP? Is it useful? When is it most useful? When is it least useful, or you find that you don't need to use it?

   a. PROBE: Can you tell me about your encounters last week? Did you check the PDMP?

5. What are your thoughts on opioid or pain contracts? Do you find them useful or not useful?

   a. PROBE: Can you tell me about the last time you used a pain contract? What was that conversation like?

6. What are your thoughts on urine drug testing? When do you use urine drug testing?

   a. PROBE: Can you tell me about the last time you used this test?

7. Do you discuss substance use with your patients?

   a. How does that information affect your decision-making?

8. What do you think about the media coverage of opioids? Has this changed your practice in any way?

9. What are your thoughts on how health systems are handling opioid prescribing?

10. Have there been changes to how you think about prescribing opioid medications over the last few years?

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Table 1.

Clinician Participant Characteristics (N = 32)

Mean Years in Practice, mean (range)	19.1 (2-40)
Sex, no. (%)	
Male	18 (56%)
Female	14 (44%)
Clinician Specialty, no. (%)	
Primary Care (e.g., Internal Medicine, Family Medicine, Urgent Care)	20 (62%)
Pain Specialist (e.g. Anesthesiology, DDS with Residency in Pain Medicine)	6 (19%)
Non-Pain Specialist (e.g. Neurology, Rheumatology)	6 (19%)
Practice Type *	
Health Maintenance Organization Group	17 (53%)
Private Practice	8 (25%)
Faculty	3 (9%)
Pain Clinic	5 (16%)

* Totals may exceed 100% due to individuals in multiple categories

Table 2.

Reasons for non-use and use of risk assessment strategies from clinicians identified as Adopters and non-adopters

Adopters reasons for using the risk mitigation strategies	**Non-Adopters reasons for not using the risk mitigation strategies**
• Treated patients equitably	• Disruptive to the patient-clinician relationship
• Facilitated with setting boundaries	• Unnecessary given close relationships
• Provided a way to document misuse, abuse, or diversion	• Introduced a power differential or did not provide patient direct benefits
• Routine and systematized protocols made use seamless	• Difficult to implement given the lack of time, protocols, and incentives