ORIGINAL RESEARCH

Barriers and Facilitators to Using a Clinical Decision Support Tool for Opioid Use Disorder in Primary Care

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Purpose: **Clinical decision support (CDS) tools are designed to help primary care clinicians (PCCs) implement evidence-based guidelines for chronic disease care. CDS tools may also be helpful for opioid use disorder (OUD), but only if PCCs use them in their regular workflow. This study's purpose was to understand PCC and clinic leader perceptions of barriers to using an OUD-CDS tool in primary care.**

Methods: **PCCs and leaders (n = 13) from clinics in an integrated health system in which an OUD-CDS tool was implemented participated in semistructured qualitative interviews. Questions aimed to understand whether the CDS tool design, implementation, context, and content were barriers or facilitators to using the OUD-CDS in primary care. Recruitment stopped when thematic saturation was reached. An inductive thematic analysis approach was used to generate overall themes.**

Results: **Five themes emerged: (1) PCCs prefer to minimize conversations about OUD risk and treatment; (2) PCCs are enthusiastic about a CDS tool that addresses a topic of interest but lack interest in treating OUD; (3) contextual barriers in primary care limit PCCs' ability to use CDS to manage OUD; (4) CDS needs to be simple and visible, save time, and add value to care; and (5) CDS has value in identifying and screening patients and facilitating referrals.**

Conclusions: **This study identified several factors that impact use of an OUD-CDS tool in primary care, including PCC interest in treating OUD, contextual barriers, and CDS design. These results may help others interested in implementing CDS for OUD in primary care. (J Am Board Fam Med 2024;37:389–398.)**

Keywords: **Clinical Decision-Making, Clinical Decision Support, Integrated Delivery of Health Care, Opioid-Related Disorders, Primary Health Care, Qualitative Research, Substance-Related Disorders, Support Systems, Workflow**

Introduction

Primary care is the most common point for health care contact in the United States. Because of their roles in guiding whole-person, patient-centered care, primary care clinicians (PCCs) are expected to implement numerous preventive, chronic disease, and acute care guidelines in their practices. However, recent estimates suggest that if PCCs were to implement all the recommended guidelines for patients they see, they would need more than 24 hours a day.[1,2] Further, PCCs are expected to implement so many guidelines that it is difficult for them to stay informed in all domains and access relevant decision-making information in a timely way.

Staying up-to-date on evidence-based treatment guidelines for opioid use disorder (OUD) may be particularly challenging for PCCs due to treatment advancements and recent regulatory changes. Since 2001, the prevalence of opioid overdose deaths has

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increased 5-fold; opioids were involved in more than 75% of the more than 106,000 overdose deaths in 2021.[3] Medications for OUD (MOUD), including buprenorphine, are safe and effective ways to reduce risk of opioid overdoses and deaths[4–6] and improve quality of life[7] and can be prescribed in primary care settings.[8] However, although the rates of buprenorphine treatment doubled between 2007 and 2018,[9] approximately 80% of people with OUD are never treated with MOUD.[10,11]

Because of its broad scope of practice and long-term relationships with families and patients, primary care is an ideal setting to identify and treat patients with OUD using MOUD.[12–14] From 2000 to 2022, federal policies required clinicians to obtain waivers to be able to prescribe buprenorphine in their practices. However, only approximately 10% of PCCs obtained a waiver,[15] and of those who did, many never prescribed MOUD.[16] In early 2023, the waiver requirement was eliminated to expand access to these treatments, so now PCCs can prescribe buprenorphine without having to complete any additional training.[17] Although removal of the waiver requirement might improve access to potential prescribers, barriers to MOUD prescribing, including lack of knowledge, institutional support, and confidence in prescribing MOUD still exist.[18–21] Moreover, many PCCs may not have received training to prescribe MOUD, as less than one quarter of family and internal medicine residency training programs have 12 or more hours of curriculum dedicated to addiction medicine and only 36% train their residents to prescribe MOUD.[22]

To address these barriers, our team implemented a clinical decision support (CDS) tool in primary care that identifies patients at high risk of OUD or opioid overdose and guides PCCs through OUD screening, diagnosis, and referral or treatment. CDS tools are software systems integrated with the electronic health record (EHR) that are designed to help clinicians implement evidence-based guidelines into care.[23] CDS tools can quickly synthesize vast amounts of clinical information available in the EHR to produce patient-specific risk factors and recommendations that can support clinical decision-making. The goal of integrating CDS tools into practice is to improve the quality and efficiency of care.[24,25]

The OUD-CDS we implemented was added to a pre-existing CDS tool for prevention and management of chronic disease (including cardiovascular disease and diabetes) with high PCC favorability and use, as measured by the proportion of eligible encounters at which the rooming staff print the CDS shared-decision-making materials (print rates).[26] During the design phase of our trial, we gathered input from PCCs[27] and patients[28] to increase the likelihood that the OUD-CDS tool would meet their needs. Despite the added OUD features being theoretically useful tools and continued high print rates of the CDS, we saw very low rates of PCCs clicking into the active guidelines in the CDS tool (the clickable features that help PCCs screen, select treatments, make referrals, and prescribe buprenorphine-naloxone that were new to the CDS tool with the addition of the OUD content). To our knowledge, this OUD-CDS is one of the first tools to implement the evidence-based guidelines put forth by the National Institute on Drug Abuse Center for Clinical Trials Network working group report.[29] Therefore, to increase use of this tool it is critical to understand the unique barriers that a CDS tool promoting the treatment of OUD might face. The goal of this study was to learn PCCs' and primary care clinic leaders' perspectives to identify barriers and facilitators to using the OUD-CDS tool in primary care. Specifically, given the rates of clinicians clicking into the OUD-CDS, we were interested in how the CDS design, content, implementation, and context might correspond with perceived usefulness, perceived ease of use, and desire to use the CDS tool. We also sought to understand how PCC experiences and preferences toward treating OUD in primary care might influence OUD-CDS use.

Methods

Study Setting and Design

This study is part of a larger, multisite, pragmatic randomized controlled trial of an EHR-linked CDS tool to help PCCs screen, diagnose, and refer or treat patients with OUD. Details of the study design are reported elsewhere, including a detailed description of the CDS content and interface. Briefly, the intervention is an EHR-linked CDS tool to improve OUD care in primary care.[30] The OUD-CDS alerts PCCs when patients may be at elevated risk for OUD or overdose based on a current diagnosis of OUD, a recent opioid overdose, a current prescription of a MOUD, or a risk score indicating high risk of OUD or opioid overdose (including problematic use of both prescription and illicit opioids). The CDS supplied guidance on OUD screening, diagnosis, and treatment through a web-interface embedded in the EHR and printed handouts for both patients and clinicians. Rooming staff were alerted through a best practice advisory when an eligible patient was roomed; they then printed the handouts and distributed them to patients and clinicians. This substudy presents data from 1 region where the study was implemented, a large multispecialty care system across 30 primary care clinics (15 intervention, 15 control) in Minnesota and Wisconsin. Two vanguard clinics went live in February 2021; the remaining clinics went live in April 2021. To understand factors that may influence CDS adoption across clinics, this qualitative, preplanned substudy was conducted during the implementation of the intervention. The study was reviewed, approved, and monitored by the HealthPartners Institute Institutional Review Board.

Participants

For this qualitative study, eligible participants were PCCs or primary care leaders (clinic managers or clinic medical directors) in study intervention clinics. A purposive sampling approach was used to obtain interviews from a variety of clinicians and leaders from clinics with varying CDS tool use rates. Potential PCC interviewees were identified using weekly reports of study eligible visits from the EHR that identified PCCs with at least 1 study eligible visit where the CDS tool was printed or clicked on in the EHR. Clinic leaders were identified using a combination of print rates at the clinic level and health system administrative records that identified clinic managers and medical directors. The interviewers (SAH, LIS) emailed invitations to participate in interviews about use and adoption of the CDS tool. If potential participants did not respond to the e-mail, interviewers followed-up by phone or e-mail to remind them about the study opportunity.

Procedure

Study investigators (SAH, LIS) conducted semi-structured interviews between March 2021 and September 2022 using Microsoft Teams virtual meeting software. Interviews were recorded and transcribed by a professional transcription service. Interviews were designed to last approximately 20 minutes (the average length of a patient appointment) and covered 6 domains: (1) opinions about the CDS tool and its implementation at their clinic; (2) main barriers and facilitators to CDS use; (3) perceived advantages and disadvantages of the CDS; (4) suggestions for CDS tool improvement; (5) opinions about primary care's role and priority for addressing OUD during clinic visits; and (6) patient reactions to the CDS tool. The research team debriefed after every 2 to 3 interviews to summarize immediate impressions and begin to identify themes. During the debrief meetings, the team decided when saturation was reached,[31] and no new interviews were needed.

Analysis

An inductive thematic analysis approach[32,33] was used to analyze the qualitative interviews. Three team members (SAH, LIS, KMM) independently read each transcript, highlighted segments of text (ie, unit of analysis) relevant to the research questions, and summarized their main observations. The team met weekly and reviewed 3 to 4 transcripts during each meeting. In the meetings, the team reviewed all the observations and created a final, agreed on list of observations for each interview. Consensus observations were coded using NVivo v. 12.[34] After all interviews were coded, the team grouped observations by overarching themes. Framework matrices were used to match units of observation (text) to coded themes. The themes were refined until group consensus was reached.

Results

The team invited 34 leaders and PCCs (18 clinic leaders and 16 PCCs) to participate in interviews. A total of 13 leaders and PCCs agreed to participate (38% participation rate: 7 clinic leaders and 6 PCCs). Of the leaders, most were clinic medical directors (n = 6) who also practiced in the clinic, and 1 was a clinic manager. About half the participants were female (n = 6). There were 5 advanced practice clinicians (physician assistants or nurse practitioners) and 7 physicians. Three PCCs were waivered to prescribe buprenorphine. The participants represented 10 of the 15 clinics included in the intervention group. The clinics represented varied in print rates, including those with high print rates (≥80% of eligible encounters; $k = 7$); moderate print rates (60 to 79% of eligible encounters; $k = 1$), and low print rates (< 60% of eligible encounters; $k = 2$). Interview data collection was stopped because (1) the team determined we had reached data saturation and were not hearing new themes, and (2) primary care teams and leaders continued to mention that they were overwhelmed with staffing shortages due to the ongoing COVID-19 pandemic.

Five themes emerged from the analysis (see Table 1 for example quotes). Most interviewees reported these views:

Theme 1: Although They Accept Responsibility for Managing OUD, Most PCCs Perceive OUD Risk Conversations as Difficult and Prefer to Minimize (1) the Number of Patients on Their Panels with OUD Risk and (2) Conversations with Them, Especially in the Absence of a Trusted Relationship

PCCs seemed to understand the importance of treating patients with OUD but noted that incorporating MOUD into their practices was not desired. PCCs generally felt that they did not want to take on that work. Further, although PCCs accepted responsibility for their own patients, it was clear that PCCs tried to avoid conversations about opioids and taking on new patients with chronic pain or OUD. Participants also described the challenges of talking about opioids and chronic pain with patients, especially in the absence of a trusted relationship.

Theme 2: PCCs Are Enthusiastic About a CDS Tool That Addresses a Topic That They Are Interested in Treating (Cardiovascular Risk), but They Lack Interest and Enthusiasm in Treating OUD and Have Fewer Patients Who Might Benefit

Most participants talked about their affinity for the part of the CDS tool that addresses cardiovascular risk reduction (CV-CDS)—it is a tool they have had in place for several years and they find it very useful. Further, there is strong leadership support to use the CV-CDS, including the ongoing monitoring and feedback and clinician interest. Fewer had used the OUD-CDS enough to be able to speak about the tool. One clinic leader thought she did not have any eligible patients because she did not prescribe opioids frequently. Another clinic leader noted that the rate of eligible patients they had seen was very infrequent, perhaps only once every 6 months. Leaders mentioned that they had not heard any complaints about the CDS, and therefore it must be working as expected. However, lack of complaints may be related to low use and lack of interest in this specific CDS or of using a CDS in general.

Theme 3: Several Contextual Problems Related to Primary Care Settings Impact the PCC's Ability to Manage OUD, Including Time Constraints, Burnout, and Few Waivered Colleagues

The COVID-19 pandemic significantly impacted primary care teams and clinicians. Repeated concerns about teams coping with burnout, massive turnover and training for new hires, and constant staffing shortages were blamed for their difficulties (or inabilities) to integrate new processes and use the CDS. In addition to the pandemic, time was a barrier that was mentioned several times, as PCCs have short visits with many competing priorities. However, 1 clinic leader did state that although time was a barrier, it was not the main barrier, because PCCs will make time for something they believe to be important. Another important aspect of context was the clinic support for prescribing buprenorphine. One clinician, who was waivered, stated that he did not prescribe buprenorphine because he did not have support from his colleagues to cover and prescribe when he was away from clinic.

Theme 4: For Clinicians to Use a CDS (for Any Problem), It Needs to Be Highly Visible, Be Simple to Use, Save Time, and Add Value to Care

One clinician had used the OUD-CDS tool several times, but the remaining clinicians and leaders interviewed had had few interactions with the tool. When probed about their reasons for not using the OUD-CDS tool very often, many mentioned that it was hard to find the web-based version of the tool in the EHR, but at the same time, they did not want many clicks added to their visits. Some participants mentioned that ongoing and repeat training may be needed to remind staff about the tool and its value. Furthermore, participants noted that the tool needs to save them time and provide some benefit to the patients (eg, facilitate easy referral to addiction care) for it to be used.

Table 1. Themes and Example Quotes from Clinicians and Leaders

Theme	Quotes
Theme 1: Although they accept responsibility for managing OUD, most PCCs perceive OUD risk conversations as difficult and prefer to minimize (1) the number of patients on their panels with OUD risk and (2) conversations with them, especially in the absence of a trusted relationship.	The initial feeling before they saw the [Opioid CDS] material was that it didn't feel like something that they were totally clamoring for, but they understood the utility of it. . . People said, "This is not something I want to take on. Even if I was able to do it, I wouldn't seek it out because I don't feel comfortable with that as part of my practice. I don't feel like I want that to be part of my practice." (Clinic Leader #591)
	I think it's to start with, not wanting the conversation [about opioids]. We have our own patients now that we cannot– well, some, of course, were able to taper their medications, but I think for the most part, the doctors here do a lot of screening not to add chronic pain patients to their panel. (Clinic Leader #449)
	I hate to say it, that while I don't minimize the importance or the gravity of opioids and why we need to be thinking about this, but I'm fighting the fights that I need to fight, and that is not my fight, with regard to that patient. (PCC #793)
	If it starts out as, "I'm treating my pain," because usually it's been a prescription. It started out as a prescription and then this was okay, but just use escalated or they were misusing it or needing early refills or whatever. Yeah. It seems like that's when people get angry because that's when they can feel like they're being labeled as something that maybe they're not. (PCC #501)
	But if I've got a long time patient who's known me, who trusts me, and I tell them this is what I really believe, and I've been telling them what I believe for 15 years, and they believe what I believe, it's easier than somebody who shows up on my schedule that I've never met before, who just says, "I just want my pain medication." And I say, "Well, you're taking way too much, and this seems like a problem," and this and that and the other thing. And we always get off on the wrong foot. So those are not fulfilling conversations no matter what. (Clinic Leader #591)
Theme 2: PCCs are enthusiastic about a CDS tool that addresses a topic that they are interested in treating (cardiovascular risk), but they lack interest and enthusiasm in treating OUD and have fewer patients who might benefit.	The docs find [the CV-CDS] incredibly useful. Yeah, we really like that one. . . . that has been a wonderful tool and a really strong convincer for patients to get behind some treatments that are good for them. So, yeah, that one we actually use pretty aggressively, I think. (Clinic Leader #591)
	For the [CV-CDS], I think we've been pushing doctors to do it. There's a central push to have everyone get measured. Everyone gets measured. And we do that on a monthly basis at the most, and maybe at least quarterly, to look at individually how their printing rates have been. . . .It gives a better idea on how our management is, how we could improve it, and of course, as I mentioned, the volume of patients that we see– diabetes, cardiovascular, hypertension. Very interesting. Versus narcotics, pain meds, pain patients. There's not an interest to take care of those patients. (Clinic Leader #449)
	I guess I don't interact with it a ton because I maybe have one or two patients that I'm filling [opioids] for at this stage. (Clinic Leader #327)
	I have not heard– usually, typically, any concerns with a tool like that will rise up to either the clinic medical director or to myself. I've not heard anything. And typically, our clinic medical director would share with me. So, I don't think there are any concerns. I haven't heard from anyone that it's inaccurate. I haven't heard from anyone that links didn't work or anything like that.(Clinic Leader #642)
	I think there are some clinicians that I just don't think really want to use any type of resources. They just want it to be like, 'This is how I prescribe, and I'm done.' And that's kind of consistently what we've seen in his practice. (Clinic Leader #528).
Theme 3: Several contextual problems related to primary care settings impact the PCC's ability to manage OUD, including time constraints, burnout, and few waivered colleagues.	One of the problems that we've run into over the last two, three years with COVID, the pandemic, with the massive amounts of staff shortages that we've had, I would say that every clinic we have gone into kind of a crisis mode. . . .What it means is that we have a workforce that is extraordinarily stretched thin, both because we lack the numbers of people we need, and then in addition to that, we lack the staff. . . .As this has happened, we're now having increasing amounts of burnout and lack of staff resiliency. Then the idea of coming in and training, like, "Here's something new," that is a problem as well. (Clinic Leader #950)
	I mean, with any initiative we're faced with, the understanding is, 'yeah, this sounds like a great idea, and this is good for our patients' and that sort of thing. There isn't an argument that it isn't something that should be medically useful.

Continued

Table 1. Continued

Theme	Quotes
	The problem is that there is a limited amount of us, and it is difficult to have those conversations at any time about narcotic use and so on. . . . I think the perception I got was, ‘this feels like another thing we have to do’ versus ‘this is a support that is good for us and our patients.’ It felt like more of an imposition than a support. And that is rough to combat because nobody is looking for more things to do than they’ve got to do right now. (Clinic Leader #591)
	If the [CDS] will save clinicians time, eventually we can get buy-in. If it will improve health and not save time, eventually we’ll get buy-in. It’s going to be a little bit of time. If it’s going to be just a little bit of extra time, but it’s going to significantly improve patient health, that– in a better world, it would get done. But in this world, it’s not happening. So the, “Hey, it’s going to help patients–” Because we are getting bombarded with, “It’s just one more thing. It’s just five clicks.” But this is years ago when I wasn’t a leader. My leader at that time came to me and said, “Hey, [NAME], it’s just one more thing. It should take less than 30 seconds.” And I said, “I counted how many things take 30 seconds that we’ve added in the past 10 years. I counted them, and it comes to 16 minutes, and I have a 20-minute visit. So, these ‘just one more things’ have now taken 16 minutes of my 20-minute visit. (Clinic Leader #950)
	I think the timing may be a factor for some, but not the main reason. I think we can make time if we think it’s important. But it’s something that we’d like to not spend a lot of time whatever for. We just feel like we have to do other things instead. (Clinic Leader #449)
	I have a Suboxone waiver. It’s just that I don’t use it as often. And it’s just not practical because our clinic does not have any other– well, at least as of the last few months we didn’t have any provider who could back me up. So, if, in my absence, somebody needed Suboxone, that would just create a whole lot of chaos in the clinic. I had to back away from prescribing Suboxone altogether. (PCC #324)
Theme 4: For clinicians to use a CDS (for any problem), it needs to be highly visible, be simple to use, save time, and add value to care.	I didn’t feel like [the CDS] was too many clicks. [For me], it was just kind of like, “Okay. Where do I find that again?” And so, I think it’s maybe that functionality. Whereas when it’s printed, it’s right there in front of you. (Clinic Leader #528)
	I feel like the [CDS] tool is almost hidden. I really have to go searching for it in the [EHR], in general. It could be just even about A1C or CV risk or whatever, so not just Opioid [CDS]. But it’s harder for me to get at. It feels like it’s kind of buried in there for some reason. And so that, to me, seems like it’s maybe the biggest hindrance, or it was for me. (PCC #501)
	The rule of thumb for anything [EHR]-based is the fewer clicks, the better. And so obviously keep it simple. We don’t want to have endless popping-up windows and hard stops and things like that. And so, if you want this to be a tool of great utility and more frequent use, keeping it as streamlined as possible. Obviously, you have to cover certain things, but the more questions you have to address, the more of a detour it seems to be from, perhaps, the main or even secondary agenda of a very time-based encounter. I think the less you’re going to see people want to stay engaged with it. (PCC #793)
	I think part of it is I would say forgetfulness, right, that we have a really useful tool. So, I think that kind of bringing it to the forefront of our mind, that reminder of utilizing it, it would be helpful. (Clinic Leader #591)
	I feel that it’s not being used appropriately or properly because of lack of awareness in the first place. (PCC #324)
Theme 5: The values of an opioid CDS for non-waivered PCCs are in identifying and screening those at risk, facilitating referrals, and having access to patient and clinician resources on opioid use best practices.	We want things that are going to help our patients, and we want things that are going to make our lives more efficient. (PCC #324)
	One thing with the [CDS] is you can tell as a feedback [*sic*] if you’re doing a good job treating your patients. So, there’s a lot of reinforcements there. . . But, for the most part, our doctors feel that they’re doing something good for the patient and for themselves. (PCC #449)
	I think the [CDS] will be helpful in that regard to, maybe, have more of a metric, if you will, that a person can look at with me—a patient can look at with me to say, “Here’s why I’m wanting to have more of a conversation about this.” . . . There’s a scale there that you have to respect and honor, and it’s all about appropriateness. (PCC #793)
	That was really a good tool, especially for those who would be prescribing Suboxone. So right now, I am not, and I don’t think I would in the near future, at least” (Clinic Leader #396)

Continued

Table 1. Continued

Theme	Quotes
	If you're Suboxone waivered or not—and we have two of our providers who are Suboxone waivered, so I do know they utilize it a lot more. I connected with one of our [physician assistants] who is Suboxone waivered, and she said it's a tool that she uses multiple times a day. Some of the clinicians here that really don't do a lot of, I would say, any opiate management– not necessarily than that. More so, they're just not necessarily maybe screening for a risk in these patients. They don't use it as much. (Clinic Leader #528)
	I mean, I think that that's where the clinician has to kind of utilize both their clinical judgment and the tool. And if they have suspicions that that may be an issue, that tool may help them kind of have that hard conversation with the patient. People can kind of get stuck in their ways of, well, this is what I've always prescribed, and maybe I've overlooked some of these red flags. And so I think it could be a good way for them to have those difficult conversations with patients. (Clinic Leader #327)
	Having access to a list of resources, if we can kind of get sort of a menu of options, as to who are the people who are there to help us out in this journey. . . .Then, having access to resources for people who test positive is key, because many of these people find it difficult to get access to either a pain specialist or a buprenorphine provider or somewhere they can get the right kind of treatment. (PCC #324)

Abbreviations: CV-CDS, cardiovascular risk reduction; CDS, clinical decision support; PCCs, primary care clinicians; OUD, opioid use disorder.

Theme 5: The Values of an Opioid CDS for Non-Waivered PCCs Are in Identifying and Screening Those at Risk, Facilitating Referrals, and Having Access to Patient and Clinician Resources on Opioid Use Best Practices

The clinicians mentioned that having easy access to best practice guidelines in the CDS, along with patient-facing handouts, would make the CDS appealing to use. Some PCCs thought the tool was better geared toward PCCs who prescribe buprenorphine, whereas nonwaivered clinicians may not find it as useful. However, participants thought the CDS could help nonwaivered clinicians recognize signs of OUD, and that the CDS should clearly lay out the path of treatment and resources for PCCs who are not interested in prescribing buprenorphine themselves.

Discussion

This qualitative study helped us to understand low rates of clicking into the OUD-CDS compared with relatively high print rates. Clinician attitudes toward managing OUD, lack of enthusiasm for adding difficult conversations to their busy days, high staff turnover, lack of appropriate training, lack of time, and perceptions that the tool is not visible, easy to use, or time saving could dissuade PCCs from using the OUD-CDS.

Despite the recognition that primary care is the right setting to identify and treat OUD by both our study participants and experts in the field,[35] there was still hesitancy among study PCCs and leaders to take on that charge. Study participants stated that PCCs will use a CDS to address issues that they perceive to be important if the CDS helps them do that and does not add time. This was the perception that they had about the CV-CDS, which was seen as a value-add to their practice and they were interested in reducing CV risk for their patients. Conversely, there was a clear lack of interest or confidence in working with, and potentially a sense of stigma toward, people with OUD. It is true that many PCCs have not had adequate training in treating substance use disorders or OUD,[22] whereas reducing CV risk is a core skill for PCCs. Clinicians often choose to work in primary care settings because of the ability to build trusting and long-term relationships with their patients,[36] and may be worried that challenging topics, like OUD, put those relationships in jeopardy. PCCs in our study stated a desire to reduce the number of patients with OUD and with chronic pain in patient panels and a reluctance to address potential substance use concerns in the absence of a trusted PCC-patient relationship. However, PCCs need to address challenging topics with patients frequently, such as smoking cessation, alcohol use, or mental health, yet discussing opioids seems to come with additional challenges. The nuances of discussing and treating OUD could impact perceptions and use of an

OUD-CDS. PCC stigma toward people with OUD has been documented and likely contributes to reduced willingness to treat and access to care for people with OUD.[37–39]

It was clear that PCCs in our study identified competing demands, opportunity costs, and limited time as barriers to using a CDS in primary care. OUD was usually not the reason for the encounter and was just another stressful problem that the PCCs would have to address. In time-limited encounters, PCCs need to make decisions about how to efficiently address multiple problems, especially in light of the many evidence-based guidelines they are expected to implement.[1,40] One option for addressing these barriers is to target CDS toward other team members, not just the PCC. For example, rooming staff or integrated behavioral health clinicians could assist with screening and diagnosis, alerting PCCs only when further treatment or referrals are needed. Team-based models of care can substantially reduce the burden on PCCs[1] and may be effective ways to implement guideline-based care for multiple conditions. However, that would require other team members with time and comfort to take that on.

Contextual factors also limited how often PCCs clicked into the active guidelines in the OUD-CDS tool. The OUD-CDS tool was originally supposed to be implemented in November 2020 and was then pushed back to April 2021 because of the COVID-19 pandemic. We heard from our primary care colleagues that they were overwhelmed with the changes and increased workload that came with the pandemic, and taking on a new procedure during this time was challenging. Further, clinics were faced with massive turnover of clinician, nursing, and rooming staff, which meant that they were both short-staffed and had to postpone training for new staff members during this time. PCCs in our study also noted the importance of having organizational and colleague support to adequately treat people with OUD, which many felt was lacking during this time.

Another finding, although not surprising, was that CDS design is critical to ensure optimal use. The Technology Acceptance Model (TAM) proposes that technological innovations will be adopted when users perceive that the tool is useful (the technology will help them achieve a desired goal) and easy to use (using the technology will be free of effort).[41] Consistent with the TAM, PCCs and leaders stated that the CDS has to be simple, visible, and save PCCs time (and not add clicks). These PCCs reported having difficulty finding the CDS tool in the EHR and felt that it should not add time to their already full encounters. These findings are consistent with recent meta-analyses of barriers to CDS use, which indicated that technological factors and effort expectancies were some of the main barriers to use.[42,43] This is perhaps 1 reason that PCCs speak fondly of the CV version of the CDS tool - it only requires 1 click (by rooming staff) to print for both the PCC and patient. There is no additional interface that PCCs can click into, and PCCs can decide the best way to integrate the information from the handouts into their encounters.[26] In addition to the patient and PCC printouts, the OUD-CDS added an additional unique feature with active guidelines to help PCCs who lacked training or confidence in treating OUD; but it was help with a problem that many PCCs would rather avoid or minimize.

OUD and overdose continue to be major problems in the US, and there have been calls to create EHR-integrated CDS tools to guide PCCs through the screening, assessment, and treatment of patients with OUD.[29] Despite the promise of CDS tools for guiding evidence-based care, use rates vary substantially based on CDS tool design, context, and content.[42,43] This study demonstrated that many of these barriers likely influenced rates of clicking into the OUD-CDS tool; however, a CDS tool targeting OUD had unique challenges of addressing a topic PCCs are hesitant to treat. Groups interested in implementing CDS tools in primary care settings to treat OUD must address PCC attitudinal barriers toward working with people with OUD to improve the use of evidence-based tools.

The strengths of this study are the robust qualitative analysis procedure paired with a purposive sampling approach that allowed us to gain perspectives from PCCs and leaders in clinics with varying rates of clicking into the OUD-CDS. However, this was also a small sample of PCCs and leaders who admitted that they had had few interactions with the OUD component of the CDS tool, limiting their ability to provide meaningful feedback. These findings are also limited to a single health care system and a specific CDS tool that is designed to address many aspects of patients with OUD risk.

Conclusions

CDS tools have the potential to greatly improve the quality and safety of care, yet they are often limited by low use rates among practicing PCCs.[24,44,45] This study identified many potential barriers, including design of the tool, contextual factors, and lack of interest in treating OUD. Future studies implementing OUD-CDS tools in primary care may address these barriers as part of their implementation to improve CDS uptake and ultimately, the quality of care provided to people with OUD.

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