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Increasing Access to Medications for Opioid Use Disorder and Complementary and Integrative Health Services in Primary Care



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OBJECTIVES: Evidence-based therapies for opioid use disorder (OUD) and chronic pain, such as medications for OUD (MOUD) and complementary and integrative health (CIH; e.g., acupuncture and meditation) therapies, exist. However, their adoption has been slow, particularly in primary care, due to numerous implementation challenges. We sought to expand the use of MOUD and CIH within primary care by using an evidence-based quality improvement (EBQI) implementation strategy.

METHODS: We used EBQI to engage two facilities in the Veterans Health Administration (VHA) from June 2018 to September 2019. EBQI included multilevel stakeholder engagement, with external facilitators providing technical support, practice facilitation, and routine data feedback. We established a quality improvement (QI) team at each facility with diverse stakeholders (e.g., primary care, addiction, pain, nursing, pharmacy). We met monthly with regional stakeholders to address implementation barriers. We also convened an advisory board to ensure alignment with national priorities.

RESULTS: Pre-implementation interviews indicated facility-level and provider-level barriers to prescribing buprenorphine, including strong primary care provider resistance. Both facilities developed action plans. They both conducted educational meetings (e.g., Grand Rounds, MOUD waiver trainings). Facility A also offered clinical preceptorships for newly trained primary care prescribers. Facility B used mass media and mailings to educate patients about MOUD and CIH options and dashboards to identify potential candidates for MOUD. After 15 months, both

facilities increased their OUD treatment rates to the ≥ 90 th percentile of VHA medical centers nationally. Exit interviews indicated an attitudinal shift in MOUD delivery in primary care. Stakeholders valued the EBQI process, particularly cross-site collaboration.

IMPLICATIONS: Despite initial implementation barriers, we effectively engaged stakeholders using EBQI strategies. Local QI teams used an assortment of QI interventions and developed tools to catapult their facilities to among the highest performers in VHA OUD treatment.

IMPACTS: EBQI is an effective strategy to partner with stakeholders to implement MOUD and CIH therapies.

KEY WORDS: buprenorphine; X-waiver; medications for opioid use disorder; opioid use disorder; complementary and integrative health.

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INTRODUCTION

The number of deaths involving illicit and prescription opioids has quadrupled since 1999, causing 64,000 deaths in 2016—a public health emergency.¹ Opioid-related mortality can be effectively reduced by treating opioid addiction, or opioid use disorder (OUD), with medications for OUD (MOUD).² MOUD includes medications such as methadone, buprenorphine, and extended-release naltrexone and represents an evidence-based, cost-effective treatment that significantly reduces harmful consequences from untreated addiction. Offering evidence-based non-pharmacologic treatments for pain management, such as complementary and integrative health (CIH) therapies (e.g., yoga,

acupuncture, and biofeedback), may help provide further pain relief in conjunction with MOUD.³⁻⁹

Although the Veterans Health Administration (VHA) has strongly endorsed MOUD,¹⁰ easy access is still inconsistent, particularly in primary care, largely due to stigma, logistical barriers, and lack of knowledge regarding MOUD.¹¹⁻¹³ Most active buprenorphine prescribers practice within specialty addiction clinics, settings that patients may avoid due to stigma. Few providers in primary care have completed training required to obtain the X-waiver from the Drug Enforcement Agency (DEA) required to prescribe buprenorphine, the most cost-effective and convenient MOUD option.¹⁴ Even with an X-waiver, most providers have never prescribed buprenorphine.¹⁵ Similarly, providers often do not suggest CIH pain management options to their patients due to lack of knowledge regarding CIH effectiveness and limited availability.¹³ Strategies that effectively support the implementation of MOUD and CIH are, however, unknown.

In this initiative, we sought to expand use of MOUD and CIH therapies in primary care with support from clinical specialists (addiction, pain) and facility leadership at two VHA facilities, to promote these therapies for OUD patients in any outpatient setting. In engaging primary care, we aimed to educate primary care providers (PCPs) about how to recognize OUD and its treatment options and to adapt a primary care-based MOUD delivery model to the unique needs of each facility. We also aimed to increase CIH access by strengthening linkages between primary care, pain clinics, and Veterans.

We used evidence-based quality improvement (EBQI) as an implementation strategy to engage primary care in a complex intervention.¹⁶ EBQI is a systematic approach to developing a research-clinical partnership that engages national- and regional-level senior organizational leaders and front-line staff in adapting and implementing evidence-based practices in the context of prior evidence and local practice conditions, with researchers providing technical assistance, formative feedback, and practice facilitation.¹⁶⁻¹⁸ This strategy has been successfully used in multi-site studies to implement a collaborative care model for depression,¹⁷ women's health primary care,¹⁶ and patient-centered medical homes.¹⁹ We aimed to test how effectively EBQI could engage PCPs in facilitating MOUD and CIH delivery to patients with OUD, with the hypothesis that EBQI would be an effective strategy to engage stakeholders to implement MOUD and CIH therapies to treat OUD.

METHODS

EBQI Implementation Strategy

We partnered with VHA regional leaders for Southern California, Arizona, and New Mexico. The regional Chief Medical Officer co-led the initiative with a local physician-researcher. We used EBQI to engage two VHA Medical Centers (facility A, facility B) in Arizona during our implementation period from

June 2018 to September 2019. EBQI included "top-down" (i.e., leadership) and "bottom-up" (i.e., front-line clinical staff) multilevel stakeholder engagement, development of a structured quality improvement (QI) action plan, practice facilitation, formative data feedback, and across-site calls (Table 1).

During our study period, we engaged national-, regional-, and facility-level stakeholders. Specifically, we twice convened a *national* advisory board (consisting of national VHA experts in pain and addiction, VHA regional and facility leaders in primary care and mental health, and a VHA health economist) to ensure alignment with national priorities, develop consensus on the problem, and advise on benchmarks of success. We met monthly with VHA *regional leaders* (our partners) to review formative data on progress, discuss methods to leverage facilitators, and address implementation barriers for MOUD and CIH uptake. On the *facility level*, we conducted pre-implementation key stakeholder interviews (14 providers, 5 Veterans) to understand OUD, MOUD, and CIH experiences at baseline. We established a local QI team at each facility with clinical staff from several specialties (e.g., primary care, pain, addiction psychiatry) across various disciplines (e.g., physicians, nursing, pharmacy), led by a physician champion. We performed an initial site visit and then convened across-site calls (facilities A and B) twice monthly for a total of 23 meetings (average attendance = 6 facility representatives/meeting). During across-site calls, we performed practice facilitation, provided EBQI training (Plan-Do-Study-Act cycles, using data to monitor progress), and reviewed formative data. QI teams developed structured action plans, performed QI interventions to implement their plans,²⁴ and developed tools. We conducted exit interviews with 8 key stakeholders to assess experiences with the initiative.

Facilities

Facilities A and B were selected in 2018 by the VHA regional leaders for this pilot given greater resources and interest (i.e., organizational readiness²⁵) to implement MOUD and CIH in primary care and develop tools. While not an explicit criterion, the sites were the top two performers in MOUD treatment rates in the region and among the top 20th percentile in the nation. As of July 2018, site A had 87,729 patients, and facility B had 53,019; both were located in urban areas. Facility A included a primary care-based interprofessional pain program,²⁶ consisting of providers with expertise in primary care, pain, addiction, psychiatry, rehabilitation, and acupuncture; pain psychologists; physical and recreation therapists; chiropractors; nurses; pharmacists; and dietitians. Facility A also served as the regional representative in the national VHA Stepped Care for Opioid Use Disorder Train-the-Trainer (SCOUTT) initiative in 2018. Facility B was designated in 2018 as a regional VHA Whole Health Flagship facility, offering health coaching, and CIH therapies and integrating Veterans' physical, mental, emotional, and spiritual needs to develop personalized health plans.^{27, 28}

Table 1 Descriptions of Evidence-Based Quality Improvement (EBQI) Activities

EBQI activity	Description	Example(s) from project
Multilevel interdisciplinary stakeholder engagement ^{20, 21}	Engagement of multiple levels of the healthcare organizational hierarchy (e.g., national, regional, facility, and clinic levels), using data to achieve consensus on priorities and target metrics at the beginning of the project	Convened advisory committee meeting; met with regional workgroup monthly; met with QI teams from facilities A and B monthly
EBQI training for Facility Champions ²⁰	Provide Facility champions with problem-solving skills (Plan-Do-Study-Act) ^{22, 23} and leadership skills to engage healthcare leaders using data	Trained QI team members in Plan-Do-Study-Act. Discussed measures of success meaningful to leadership
Practice facilitation through regular calls with the local quality improvement (QI) teams ^{20, 21}	Coach local QI team in QI principles to support improvement in primary care practices	Encouraged facilities to consider the underlying problems, potential solutions, potential explanations for results, and alternative solutions
Structured QI action plan ²⁰	Local QI teams develop QI action plans that follow the Plan-Do-Study-Act cycles, ²² including data collection and measurement	Facility A proposed a plan to develop a collaborative care agreement to treat OUD among addiction, pain, primary care, and mental health service lines; increase the number of X-waivered providers; and transfer patients on stable doses of MOUD to primary care. Facility B proposed a plan to increase the number of X-waivered providers in primary care and transfer patients on stable doses of MOUD to primary care. Provided quarterly updates on data to regional workgroup and QI teams
Regular discussions of formative data feedback ^{20, 21}	Discussions of progress towards target metrics using administrative data and qualitative data	Facilities A and B participated in the same monthly call
Across-site calls ^{20, 21}	Multiple sites are coordinated for the same call to enable across-site learning, allowing local QI teams to share best practices and assist with problem-solving	

Measures

We used the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, Maintenance)²⁹ to assess the process and outcomes of our pilot intervention (Table 2). Qualitative and quantitative data were shared with site, regional, and national stakeholders throughout the initiative.

Quantitative Measures. Based on input from our operational partners, our primary outcome measure was the percentage of patients with OUD who received MOUD in the past year, a VHA performance measure.³⁰ Patients with OUD were identified using ICD-10 codes (F11.1**, F11.2**) from an inpatient or outpatient encounter. MOUD was defined as a prescription for at least one opioid antagonist [naltrexone] or opioid agonist (sublingual buprenorphine [Subutex] or

Table 2 Outcomes Mapped to RE-AIM²⁹

RE-AIM construct	Outcome(s)	Data source
Reach	<ul style="list-style-type: none"> ■ Number of interventions targeting patients with OUD or at risk for OUD not on MOUD ■ Number of patients not on MOUD who received education about OUD and MOUD/CIH options 	Administrative records
Effectiveness	<ul style="list-style-type: none"> ■ Percentage of patients with OUD on MOUD during the implementation period at study sites (primary outcome) 	VHA CDW
Adoption	<ul style="list-style-type: none"> ■ Number of educational/training sessions held at each facility, including X-waiver trainings ■ Number of staff who attended each educational session ■ Number of providers who received X-waivers from the DEA ■ Number of X-waivered providers who prescribed buprenorphine 	Administrative records, VHA CDW
Implementation	<ul style="list-style-type: none"> ■ Facilitators and barriers to prescribing MOUD and referring to CIH ■ Acceptability of prescribing MOUD in primary care ■ Feasibility of prescribing MOUD in primary care ■ Development of at least one tool to promote MOUD or CIH use in primary care 	Semi-structured interviews with relevant stakeholders, administrative records
Maintenance	Not reported in this study	N/A

buprenorphine/naloxone [suboxone] or methadone) in VHA and non-VHA pharmacy data. For the VHA performance measure, a patient diagnosed with OUD could either be prescribed MOUD or have at least one visit to an opioid treatment program. At the time, administrative coding for patients' use of CIH therapies was nascent and inconsistent, so reliable CIH utilization metrics were not available.¹³ Our sample size was not powered sufficiently to measure changes in opioid-related mortality.

Qualitative Measures. Semi-structured interviews were conducted one month before and one month after the implementation period using the Practical Robust Implementation and Sustainability Model (PRISM).³¹ We explored contextual factors influencing MOUD prescribing and referring to CIH during the pre- and post-implementation interviews.

Data Sources

Data were obtained from the VHA electronic health record through the VHA Corporate Data Warehouse (CDW), semi-structured interviews, and administrative records (meeting minutes).

CDW includes patient demographics, diagnoses, utilization, and medications.³² We used VHA Academic Detailing reports, drawn from CDW and DEA records (April 2018–December 2019) to identify providers with an X-waiver recognized by VHA as having permission to prescribe buprenorphine.

For pre-implementation key stakeholder interviews, we used snowball sampling with guidance from regional leadership to identify appropriate stakeholders at each facility. These included PCPs, addiction psychiatrists, nurses from primary care and pain, and clinical pharmacists. We also interviewed patients diagnosed with OUD and who had received MOUD prior to implementation. Exit interviews were conducted after implementation with QI team participants. Interview guides were reviewed by regional leadership and union representatives to ensure relevance to facilities; subject matter experts ensured coverage of relevant domains. Interviews lasted 15–30 min, were conducted by phone, and were audio-recorded and professionally transcribed. We used a rapid analysis approach^{33, 34} to explore a priori themes based on the interview guides, but also allowing for emergent themes.

We reviewed administrative records (i.e., detailed minutes of workgroup meetings and QI meetings) and obtained records from facility champions to construct a timeline of interventions at each facility. These interventions were used to annotate facility-specific statistical process control charts (Appendix), a technique frequently used in QI to visualize data trends and indicate when observed changes may be attributed to inherent variation (common cause variation) or an intervention (special cause variation).^{35, 36}

Ethics

This QI initiative was designed for internal purposes in support of the VHA mission³⁷ and was given a determination of non-research by the VHA Greater Los Angeles Institutional Review Board.

RESULTS

Pre-implementation

We found that a majority of patients with OUD who were not treated with MOUD in the 3 years prior to implementation were recently seen in primary care (Table 3). Facility A had 1421 patients diagnosed with OUD, 66% of whom had not been prescribed a buprenorphine product (buprenorphine/naloxone or buprenorphine); Facility B had 741 patients diagnosed with OUD, 79% of whom had not been prescribed a buprenorphine product.

We found that there was limited capacity to treat OUD, particularly in the primary care setting. Most X-waivered providers in both facilities were in psychiatry. Only one facility had a methadone clinic. Facility A had 32 X-waivered physicians, 2 (6%) in addiction psychiatry, 25 (78%) in psychiatry, 3 (9%) in pain, and 2 (6%) in primary care (neither of whom had prescribed buprenorphine). Facility B had 21 X-waivered physicians, 1 (5%) in addiction psychiatry, 18 (86%) in psychiatry, 2 (10%) in surgical service, and 0 in primary care.

According to initial facility leadership interviews, both facilities' primary care and mental health leadership supported buprenorphine prescribing to increase MOUD access. Furthermore, they had identified physician champions in primary care or mental health who either already prescribed buprenorphine or strongly supported OUD treatment. Stakeholder interviews at both facilities revealed barriers to prescribing MOUD including stigma, lack of MOUD-related knowledge and training, and lengthy processes for credentialing and privileging providers to prescribe buprenorphine even after obtaining X-waivers. Interviews indicated strong front-line reluctance to prescribing buprenorphine in primary care due to insufficient support, PCP turnover and burnout, and nursing burnout. One PCP lead said:

No PCPs want to do it. At our facility, PCPs don't have enough support. Lots of non-clinical work falls on them—the nursing leadership does not want to help with the workloadBecause of this, there's lots of turnover. PCPs burn out because they are constantly being asked to take on more. Honestly, my reaction to this idea is 'no frickin' way—you're not going to put more on my docs or I will lose them. This always happens—a good idea comes down that gets dumped on Primary Care because no one else wants to do it.

Veterans expressed satisfaction with the VHA buprenorphine program in addiction treatment settings but

Table 3 Descriptive Data of Patients Diagnosed with OUD Three Years Prior to Implementation Period

Patient-level characteristics	Facility A (n = 1421)	Facility B (n = 741)
Age (mean)	53.1	54.6
Male, %	1279 (90%)	659 (89%)
Patients with OUD who have been <i>prescribed an opioid</i> (not MOUD) in past 6 months, n (%)	314 (22%)	261 (35%)
Patients with OUD who have been not been <i>prescribed</i> buprenorphine/naloxone or sublingual buprenorphine in past 3 years, n (%)	941 (66%)	584 (79%)
• Patients who had an encounter in VHA Primary Care in the past 6 months, n (%)	609 (65%)	365 (63%)
• Patients who had an encounter in VHA Mental Health in the past 6 months, n (%)	536 (57%)	288 (49%)
• Patients who had an encounter in VHA Pain clinic in the past 6 months, n (%)	100 (11%)	100 (17%)
• Patients who had an encounter in VHA Emergency Department in the past 6 months, n (%)	352 (37%)	202 (35%)

reported lack of education about buprenorphine as a treatment option from VHA primary care:

I was actually going to go to a private clinic with a Suboxone program. And the clinic, the first thing they said was, ‘Why aren’t you going to the VA? The VA has this program.’ And I had no idea at all that the VA even offered the program... back in the day, primary care physicians were not saying anything about it. They weren’t saying, ‘Hey, we have a Suboxone program if you would like to get off pain meds.’ I was never told that.

Baseline stakeholder interview data revealed awareness and utilization of CIH therapies by clinicians in primary care, addiction psychiatry, and pain clinics at both facilities; therefore, efforts during implementation primarily focused on increasing MOUD access.

Implementation

Both facilities developed action plans (Table 4) for increasing MOUD access by adapting evidence-based models of buprenorphine treatment.⁴⁰ Facility A proposed a collaborative care model of OUD treatment in the interprofessional pain program, with registered nurses serving as care managers and clinical pharmacists supporting the treatment team.³⁸ Facility B proposed an office-based opioid treatment model in primary care.³⁹ Both facilities proposed initiating buprenorphine in specialized settings (e.g., pain, addiction psychiatry), then transitioning to primary care for maintenance.

Both facilities performed a variety of QI interventions and developed tools during the initiative (Table 4, Appendix). Both facilities expanded buprenorphine/naloxone prescribing on specialty clinical teams and conducted educational meetings aimed towards primary care, such as Grand Rounds and X-waiver trainings. Facility A also offered a clinical preceptorship to allow newly X-waivered PCPs to shadow other experts in specialty clinics, resulting in a checklist of training elements. Facility B prepared patients/consumers to be active participants by mailing OUD and CIH information to Veterans and used mass media to promote information about OUD, MOUD, and

naloxone. Finally, facility B used existing VHA quality dashboards as an audit and feedback tool to identify actionable OUD patients (e.g., patients with OUD who could benefit from MOUD) and to notify PCPs about actionable steps.

Evaluation

By the end of the implementation period, both facilities had increased capacity for prescribing buprenorphine, particularly in primary care (Table 5). At Facility A, 42 providers were X-waivered, 8 in primary care (19%), 2 of whom had begun prescribing buprenorphine. At facility B, 30 providers were X-waivered, 6 in primary care (20%), one of whom had begun prescribing buprenorphine. Primary care accounted for $\leq 1\%$ of the buprenorphine prescriptions at both facilities. There were no changes to methadone capacity at either facility.

After 15 months, both facilities increased OUD treatment rates to the ≥ 90 th percentile of VHA medical centers nationally (Fig. 1). Facility A increased their OUD treatment rate from 45.4 to 50.2%, ranking #15 of 140 VHA medical centers. Facility B increased OUD treatment rate from 46.4 to 65.4%, ranking #1 nationally.

During exit interviews, stakeholders reported shifts in attitudes and processes around MOUD, particularly acceptability within primary care:

... I have definitely noticed an organizational shift. This is something that went from something very super-specialty care... to something that people see... as possibly being able to be managed. If it’s mild to moderate opiate use disorder, people can view it as something that can be managed within a primary care setting or primary psychiatry setting as well, and then... triaging more complicated cases to specialty care.

In addition, PCPs reported integrating CIH therapies to address chronic pain issues among patients on MOUD and among patients on chronic opioids to decrease opioid dosages.

Sometimes you hear, ‘Well, it’s working in the case of the cravings, but—my shoulder, which is why I got

Table 4 QI Activities, by Facility

QI activity	Facility A	Facility B
Proposed action plan	<ul style="list-style-type: none"> Adapted collaborative treatment model³⁸ for with registered nurse and clinical pharmacists supporting the Pain treatment team. Patients are initiated and stabilized on buprenorphine in Pain clinic, then transitioned to primary care for maintenance. 	<ul style="list-style-type: none"> Adapted office-based opioid treatment³⁹ for primary care setting. Patients are initiated and stabilized on buprenorphine in Addiction Psychiatry, then transitioned to primary care for maintenance.
QI interventions	<ul style="list-style-type: none"> Credentialing: three prescribers in Pain had X-waivers activated in VA and began performing buprenorphine inductions and providing injectable naltrexone and buprenorphine Expanded Pain clinical team: Hired dedicated MOUD nurse care manager to coordinate care and assigned pharmacist to perform clinical assessments to follow-up patients between provider visits. 6 primary care educational meetings organized by Pain: 2 Grand Rounds aimed towards PCPs attended by > 100 participants; 4 X-waiver trainings attended by a total of 19 PCPs, 26 pharmacists, 20 nurses, 18 specialty providers (pain, emergency department, geriatrics). Shadow other experts: 5 newly X-waivered prescribers in primary care shadowed MOUD prescribers in Pain clinic 	<ul style="list-style-type: none"> Expanded Addiction Psychiatry team: 2 advanced practice nurses with X-waivers were hired to prescribe buprenorphine/naloxone. 3 primary care educational meetings organized by Addiction Psychiatry: 1 Grand Round aimed towards PCPs attended by 22 providers; 2 X-waiver trainings, attended by 9 PCPs and 5 specialty providers (emergency department, pain) Prepare patient/consumer to be active participants: mailed information about OUD and CIH to 313 Veterans prescribed both long-term opioids and benzodiazepines; provided information to homeless and at-risk Veterans during 2 community events (“stand downs”) Mass media: developed patient-facing marketing materials about OUD, MOUD, and naloxone in VA facility common areas Audit and feedback: identified patients with OUD who could benefit from MOUD, patients who have been inappropriately diagnosed with OUD, and patients who might benefit from OUD risk mitigation strategies (e.g., urine drug screen, informed consent, naloxone), and gave targeted feedback to PCPs, such as referring to addiction treatment programs or revising encounter coding diagnoses, through email and one-on-one meetings. Direct-to-consumer letter Patient-facing marketing materials Dashboard review manual
Tools developed	<ul style="list-style-type: none"> Checklist of training elements to prepare PCPs to prescribe buprenorphine 	

PCP primary care providers

addicted in the first place, is still bothering me.’ I can offer them then some of those [CIH] therapies in addition to just prescribing their Suboxone.

After the initiative, exit interviews indicated that EBQI multilevel stakeholder engagement and alignment was critical, with leadership and clinician buy-in to improve outcomes. All but one participant wished to continue meeting on a monthly basis: “I think creating a community where a community was not there before really made a huge difference.” Exit interviews indicated stakeholders valued the EBQI process, particularly cross-site collaboration to share ideas and to problem-solve.

DISCUSSION

We found that using EBQI allowed us to effectively engage stakeholders to overcome implementation challenges in increasing OUD treatment with MOUD and CIH. EBQI consists of a bundle of implementation strategies that have been identified by VHA Quality Enhancement Research Initiative (QUERI) to effectively increase uptake of evidence-based practices in a learning health system.⁴¹ As a *transformational implementation strategy*, EBQI was able to cultivate leadership skills, bring stakeholders together through a shared vision, and foster ownership among local QI teams in the

Table 5 Number of Buprenorphine Prescribers and Prescriptions from June 2018 to December 2019, by Clinical Setting

	Primary Care	Pain	Emergency Medicine	Psychiatry	Addiction Psychiatry	Total
Facility A						
Number of X-waivered prescribers,* n (%)	8 (19%)	6 (14%)	0 (0%)	24 (57%)	4 (10%)	42
Number of X-waivered prescribers who have already begun prescribing buprenorphine, n (%)	2 (8%)	6 (25%)	0	15 (6%)	4 (17%)	24
Number of prescriptions, n (%)	2 (0.003%)	253 (37%)	0	237 (34%)	201 (29%)	693
Facility B						
Number of X-waivered prescribers,* n (%)	6 (20%)	3 (10%)	1 (3%)	17 (57%)	3 (10%)	30
Number of X-waivered prescribers who have already begun prescribing buprenorphine, n (%)	1 (6%)	1 (6%)	0	13 (72%)	3 (17%)	18
Number of prescriptions, n (%)	5 (1%)	5 (1%)	0	47 (12%)	289 (84%)	346

*Recognized by VHA as having permission to prescribe buprenorphine

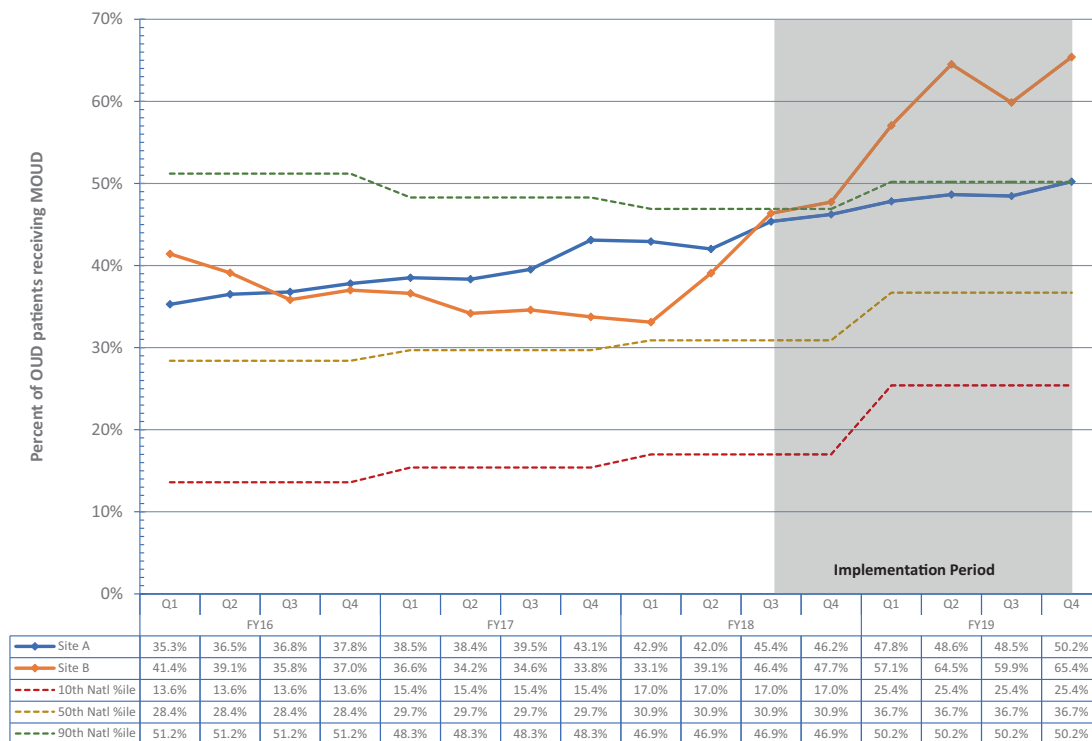


Figure 1 Percentage of patients with Opioid Use Disorder (OUD) receiving Medications for OUD (MOUD).

implementation process.⁴¹ We initially encountered strong PCP resistance to prescribing MOUD; by the end of the 15-month implementation period, some PCPs were starting to prescribe MOUD.

Partnering with front-line staff was critical to local QI team innovation and problem-solving and to tailor implementation efforts to local context, as many successful QI projects have found.^{20, 42, 43} As researchers, we provided staff with qualitative and quantitative data obtained from each facility. While we identified provider-level, practice-level, and facility-level issues similar to those identified in the literature,^{11, 12, 15, 44, 45} each QI team developed and deployed unique tools. Facility A, for instance, used interdisciplinary team X-waiver trainings. Although only prescribers traditionally attend X-waiver training, they encouraged pharmacy and nursing staff to attend to facilitate implementation of a collaborative care model. Facility B educated patients through mass media, mailings, and in-person communication; this allowed patients to become stakeholders and active participants, increasing their interest in MOUD. Facility B also used audit-and-feedback,^{46, 47} a powerful strategy to influence provider behavior by educating providers on proper diagnosis of OUD and recommending referrals to addiction treatment programs.

An additional key component to overcoming PCP resistance included primary care-specialty partnerships to promote PCP education. In facility A, culture change was driven by a strong relationship between primary care and the facility's interprofessional pain program. During implementation, pain and addiction specialists provided education about OUD and

MOUD, skills-building training (i.e., X-waiver trainings), and participatory learning approaches (i.e., clinical preceptorships for newly X-waivered PCPs). They were also responsive to PCP questions, case discussions, and requests for consultations. Similarly, in facility B, addiction psychiatry developed a strong relationship with primary care during the initiative, providing PCPs with group and one-on-one education and skills-based training.

Strong patient interest in CIH therapies is consistent with prior results in the literature.⁴⁸ We were surprised that providers reported that little was needed to improve their referral process or address provider misperceptions about CIH therapy effectiveness, as this was contrary to our earlier findings.⁴⁹ However, these provider sentiments may reflect pressure by VHA leadership to increase CIH therapy availability when referral processes or providers' awareness of CIH therapies' effectiveness could be improved. In other ongoing evaluations of VHA CIH therapy provision and the Whole Health transformation,²⁸ we found that most facilities struggle with a variety of CIH therapy implementation issues and patient use,^{13, 50} although those issues are much improved relative to three years ago.⁵¹

In terms of limitations, this initiative took place in two pilot facilities in one VHA region; results are not generalizable across VHA or outside of the VHA. However, EBQI can be used in other settings in VHA or outside of VHA.^{18, 20, 21} We were unable to quantify CIH therapy utilization due to inconsistent coding practices across VHA. Since then, as part of the Whole Health transformation, facilities are making a

concerted effort to consistently code CIH therapy use, and a national CIH therapy use database has been initiated to facilitate data availability. Our target population was also limited to patients with OUD and does not include those with complex persistent opioid dependence,⁵² or patients with chronic pain on high-dose long-term opioids with physiologic dependence. Finally, we are unable to report maintenance or sustainability. After the implementation period ended, VHA issued a memo (October 2019) that recommended that each facility (1) remove institutional barriers of requiring credentialing and privileging to prescribe buprenorphine after obtaining an X-waiver and (2) incentivize non-specialty providers to prescribe buprenorphine. This will likely have a significant impact on future buprenorphine prescribing in primary care across VHA.

In conclusion, EBQI facilitated local QI team interventions to promote MOUD and CIH use, which ultimately transformed their facilities to among the highest performers in OUD treatment. EBQI is an effective strategy to engage stakeholders in implementing MOUD and CIH therapies to treat OUD and build capacity for problem-solving and innovation. During the next phase, we plan to disseminate lessons learned and tools developed by the pilot facilities to the remaining facilities in the region and evaluate the sustainment of primary care OUD models. Future work could focus on the effects of VHA national implementation strategies, such as the change in credentialing for prescribing buprenorphine and the train-the-trainer strategy.

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Compliance with Ethical Standards:

This QI initiative was designed for internal purposes in support of the VHA mission³⁷ and was given a determination of non-research by the VHA Greater Los Angeles Institutional Review Board.

Conflict of Interest: The authors declare that they do not have a conflict of interest.

Disclaimer: The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs, or the US government, or other affiliated institutions.

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