Consortium to Disseminate and Understand

Implementation of Opioid Use Disorder Treatment (CONDUIT)

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A. Background and significance

Opioid and other drug overdose is now the number one cause of accidental death in the U.S. by a wide margin.[1] This is due to multiple factors, most notably a marked surge in opioid prescribing for pain from the early 1990's to the mid-2010's.[2] Veterans are a particularly vulnerable group, experiencing opioid overdose at nearly twice the rate of non-Veterans.[3] Many overdose victims have opioid use disorder (OUD), a condition defined by compulsive use of opioids despite negative consequences and use of illegal opiates including heroin. Therefore, to combat the opioid overdose epidemic in the U.S. particularly among Veterans, improved diagnosis and treatment of OUD is paramount.[4] Furthermore, to break the cycle of over-reliance on opioids for pain treatment, alternative therapies for pain must be made readily accessible. Veterans already on risky long-term opioid therapy (LTOT) for chronic pain, the group perhaps at highest risk for developing OUD, need structured, coordinated efforts to treat their pain more effectively and safely.

Fortunately, unlike some addictive disorders, there are evidence-based, effective medications for opioid use disorder (MOUD), including buprenorphine/naloxone, methadone and naltrexone.[5] The Veterans Health Administration (VHA) seeks to make these potentially life-saving treatments available to every Veteran with OUD. While the Substance Use Disorder national program office within VHA's Office of Mental Health and Suicide Prevention (OMHSP) has prioritized dissemination of MOUD across VHA, rates of uptake of MOUD are highly variable throughout VHA. This is in part due to the stigma associated with OUD, and reluctance of providers to engage in caring for this stigmatized group, especially if they have experienced difficulty with a prior patient with OUD. Thus, in 2017, the VHA National Leadership Council identified three priority goals, one of which was the improvement of "access to medication-assisted therapy for opioid use disorder and alternative therapies for pain." In response and in recognition of major gaps in understanding effective MOUD implementation activities, VHA's QUality Enhancement Research Initiative (QUERI) created the Veteran Integrated Service Network (VISN)-Partnered Implementation Initiative (PII), which in 2018 funded five projects co-led by VISN leadership and implementation experts. These five one-year Phase 1 projects have implemented evidence-based programs in four VISNs across a range of clinical settings using evidence-based Implementation Facilitation (IF), described below. This Phase 2 proposal aims to integrate and expand these projects over three additional years as a single Consortium to Disseminate and Understand Implementation of Opioid Use Disorder Treatment (or CONDUIT), to serve the dual purpose of expanding access to MOUD while examining effective IF activities that drive these outcomes. CONDUIT consists of 4 external facilitation (EF) teams partnering with internal facilitation teams at 57 sites across 6 VISNs to implement evidence-based practices across the OUD/pain continuum of care: Primary care, specialty care, acute care (hospital and emergency department) and telehealth (**Figure 1**). Three Cores – Veteran Engagement, Implementation, and Quantitative/Economic will work across teams and sites to ensure alignment of measures and to support cross-CONDUIT deliverables. Together, as a consortium, we will leverage our collective pilot work, resources and expertise to have the whole be greater than the sum of the parts.

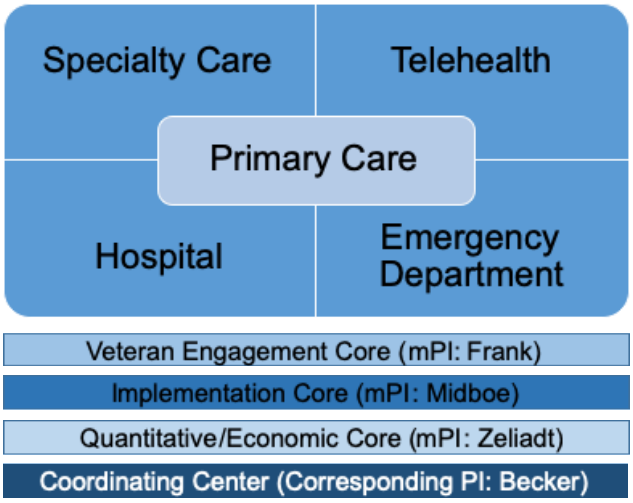

Figure 1. Continuum of OUD care and CONDUIT Core organization

B. Innovation

The VHA Consortium to Disseminate and Understand Implementation of Opioid Use Disorder Treatment (CONDUIT) will improve access to evidence-based MOUD and advance the science of implementation in several ways. First, CONDUIT will provide an integrated, multidisciplinary approach to implementation of evidence-based MOUD across the continuum of care in VHA. CONDUIT implementation teams incorporate expertise from addiction medicine and addiction psychiatry, primary care and hospital medicine, implementation science and health economics. As VHA facilities across the six Phase 2 VISNs will have a range of goals, this multidisciplinary approach will allow CONDUIT to work across the continuum of care at implementation facilities (Figure 1). Second, CONDUIT is well-positioned to advance the science of

implementation while improving OUD care for Veterans. The CONDUIT Implementation Core brings together a national network of implementation experts with specific experience in addiction and pain. Third, CONDUIT will meaningfully engage Veterans throughout the project, ensuring that improvements in access to MOUD are Veteran-centered and responsive to the needs of this extremely vulnerable group. The CONDUIT Veteran Engagement Board will build on best practices across VHA and on local experience with Veteran engagement at CONDUIT sites. Finally, CONDUIT is well-positioned to collaborate with ongoing VHA initiatives such as the Opioid Safety Initiative, the Stepped Care for Opioid Use Disorder Treatment (SCOUTT) Initiative and the Health Services Research and Development (HSR&D) Pain/Opioid Consortium of Research (CORE) (**Figure 2**). CONDUIT Principal Investigators are well-represented in leadership positions of these initiatives, and CONDUIT will both be bolstered by and simultaneously enrich these sister initiatives.

C. Preliminary work

C.1. Partnered Implementation Initiative (PII) Phase 1: In 2018, QUERI funded five projects co-led by VISN leadership and implementation experts, each addressing the VHA National Leadership Council healthcare priority goal to improve "access to medication-assisted therapy for opioid use disorder and alternative therapies for pain." These five, one-year Phase 1 projects implemented evidence-based programs using IF in 7 medical centers and 8 community-based outpatient clinics (CBOCs) in 4 VISNs and across a range of clinical settings. Phase 1 PIIs have led to multiple activities and products with measurable impacts on the number of Veterans receiving MOUD and on the number of providers qualified to prescribe buprenorphine for OUD (**Table 1**).

Table 1. PII Phase 1 Impacts

Implementation Site	Phase 1 MOUD rate		FY19 buprenorphine capacity	
	Q2 FY18	Q2 FY19	Waivered*	Prescribing**
VISN1	2,117 (35%)	2,216 (40%)		
VA Bedford HCS	200 (34%)	203 (35%)	27	16
Manchester VAMC	153 (22%)	139 (46%)	11	5
VA Maine HCS	158 (26%)	210 (33%)	26	14
VISN19	833 (24%)	863 (26%)		
VA E. Colorado HCS	189 (20%)	173 (19%)	57	17
Salt Lake City VA HCS	197 (24%)	227 (28%)	74	48
VISN22	1,554 (25%)	1,701 (28%)		
S. Arizona VA HCS	212 (32%)	261 (44%)	44	20
Phoenix VA HCS	281 (29%)	342 (34%)	57	20
VISN23	485 (20%)	538 (24%)		
Iowa City VA HCS	77 (23%)	87 (28%)	10	4

Data from the VA Academic Detailing Buprenorphine Dashboard (accessed 5/22/19). *Waivered = Number of providers who have completed required training; **Prescribing = Number of providers with at least 1 active buprenorphine prescription in Q2 FY19.

VISN1: The two VISN1 PII teams worked in parallel to expand specialty care and telehealth resources. They engaged teams in weekly/biweekly conference calls, performed formative evaluations, systematically identified capacity to implement core components and developed the business case for the value of the clinic model to a facility, conducted site visits and developed detailed action plans. As a result of VISN1 efforts in telehealth, two new prescribers were trained and tele-prescribed MOUD to Veterans at the target CBOCs; the three target CBOCs went from no patients treated with MOUD to 12. The VISN1 team created a toolkit including descriptions of logistical, legal and clinical procedures to guide spoke sites in the care of Veterans participating in clinical video teleconferencing, answers to frequently asked questions (FAQs), and information sheets to assist primary care providers (PCPs) in working with patients on buprenorphine.

VISN19: The VISN19 PII team has delivered three buprenorphine waiver trainings in primary care settings to expand the workforce of prescribers qualified to prescribe buprenorphine. As of May 2019, there are 59 prescribers in the VA Eastern Colorado Health Care System (ECHCS) with a buprenorphine waiver with 7 PCPs and 8 Internal Medicine residents completing waiver training during Phase 1. In the VA Salt Lake City Healthcare System, there are 78 prescribers with a buprenorphine waiver. They have met with VISN leadership on a quarterly basis during Phase 1 to discuss progress and barriers. In collaboration with the MAT-VA Initiative, they have led monthly webinars on OUD diagnosis and treatment for a national audience. They

have also engaged Veterans, completing 10 semi-structured interviews of Veterans with OUD at VA Salt Lake City to understand perspective on primary care-based OUD treatment.

VISN22: The VISN22 PII team conducted key stakeholder interviews among PCPs, nurses, pain providers, addiction psychiatrists, and Veterans and analyzed site-specific baseline data on process and outcome measures for our two VISN22 pilot sites. They led three waiver trainings for a total of 46 providers at 2 sites. They are developing multiple products to support expanded implementation: a PowerPoint presentation for PCPs on how to recognize and treat OUD; a coding "cheat sheet" for PCPs and psychiatrists to use in managing patients with OUD (including ICD-10 and CPT codes); a training pathway for X-waivered prescribers to increase confidence in prescribing buprenorphine.

VISN23: The VISN23 PII team developed an opioid management guide to promote changes in inpatient opioid prescribing practices and improve recognition and management of OUD. They developed an order set to facilitate use of non-pharmacologic pain treatment options available in the hospital. Based on a survey of nationally available resources and guides for MOUD, they drafted a VHA-specific toolkit for improving recognition and management of OUD in the inpatient setting. One hospitalist prescriber has obtained an X-waiver during Phase 1. Finally, they identified synergies with colleagues expanding MOUD to Emergency Department settings where shared implementation strategies will be beneficial.

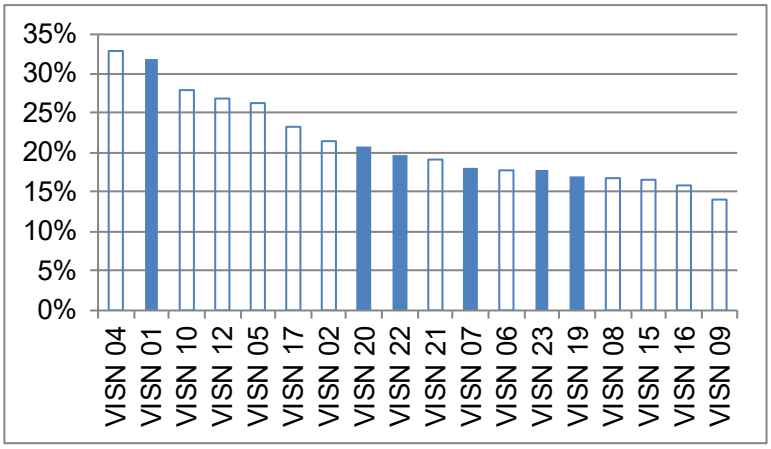

Figure 2. Proportion of Veterans with OUD Receiving MOUD

Since December 2018, these Phase 1 teams plus EF teams from VISN7 and VISN20 have met weekly to align implementation and measurement strategies. These 6 VISNs represent a diverse geographic sample of Veterans, healthcare providers and a range of baseline rates of MOUD at the VISN level (CONDUIT VISNs shown in blue in **Figure 2**).

C.2. Emerging VISN Priorities: This PII Phase 2 proposal incorporates two key emerging VISN and QUERI priorities. First, this proposal incorporates the VISN20 EF team leading the implementation of a telehealth-based pain management program (Tele-Pain: see **Appendix 3**). This project was selected for PII Phase 1 funding starting June 2019 and offers several key points of synergy. This project shares the VHA National Leadership Council healthcare priority goal of improving OUD and pain treatment and is led by Dr. Steve Zeliadt, who co-leads the Quantitative/Economic Core of CONDUIT. Though at a more nascent stage, this project's incorporation into CONDUIT will create opportunities to align measures of patient outcomes and cost that will benefit CONDUIT overall. Additionally, we will approach Tele-Pain sites to determine interest in adapting VISN1's toolkit for tele-prescribing of MOUD, noting that about 5% of the target pain population in the Tele-Pain implementation sites have an OUD diagnosis. Second, this proposal expands the range of clinical settings targeted during Phase 1 to now include Emergency Department (ED) settings, tightly aligned with inpatient settings, as is consistent with real-world clinical practice. With funding from the Comprehensive Addiction and Recovery Act of 2016, an EF team led by Dr. Comilla Sasson, MD, PhD has led implementation of several ED-based opioid initiatives since 2018. Based in VISN19 at the VA ECHCS and partnered with national Emergency Medicine leadership in VHA, this team has led implementation of efforts to promote non-opioid pain treatments, increase opioid overdose education and naloxone distribution and expand access to MOUD in ED settings.

D. Approach

D.1. Overview: CONDUIT's overall objective is three-fold: 1) increasing uptake of evidence-based MOUD (specifically buprenorphine formulations FDA-approved for OUD and injectable naltrexone) across 4 distinct clinical settings using IF strategies; 2) evaluating the effectiveness of those strategies across highly-salient metrics of implementation success and 3) estimating costs of implementation activities. CONDUIT uses evidence-based IF consisting of 4 EF teams partnering with internal facilitation teams at 57 sites across 6 VISNs to implement evidence-based practices across the OUD/pain continuum of care. Three Cores – Veteran Engagement, Implementation, and Quantitative/ Economic – will work across teams and sites to ensure alignment of measures and to support cross-CONDUIT deliverables.

D.2. Cross-CONDUIT Cores supporting overarching goals:

Veteran Engagement Core: The Veteran Engagement Core will seek to ensure the relevance of this work to Veterans and to facilitate successful implementation. This Core will consist of a Veteran Engagement Board (VEB) and support staff. The goals of this Board are to provide feedback and oversight to CONDUIT and to ensure the Veteran-centeredness of implementation and dissemination. The VEB will draw on community-based participatory research (CBPR) methods, modeled after the Veteran Research Engagement Board at the VA ECHCS, established as one of the first center-level Veteran engagement groups in 2014. Since March 2019, we have engaged and met monthly with one of the Veteran Peer Support Specialists at VA ECHCS on the development of the CONDUIT VEB. We will also draw from experiences of Veteran Research Engagement Boards at VISN PII partner sites in Iowa City, Los Angeles, West Haven and Palo Alto. Finally, we will consult resources such as the Strengthening Excellence in Research through Veteran Engagement toolkit to ensure that the board has agency and a true voice in projects.

We will recruit 1-2 Veterans from each of the VHA systems in this PII application for a total of 12-14. The recruitment strategy will be modeled on the successful strategy to create a national Veteran engagement panel for an ongoing PCORI-funded clinical trial. Recruitment will leverage the expertise and relationships of Veteran peer support specialists and other providers in VHA and local clinical settings at these sites, who will assist in identifying candidates. We will seek candidates who meet each of several criteria: 1) personal experience with OUD and in treatment/recovery for at least 1 year; 2) willing to work collaboratively; 3) able to demonstrate ability to use technology for distance participation; and 4) interested in 3-year participation. We will conduct preliminary meetings by telephone with participants to discuss potential roles of the VEB and request a written statement of interest. Candidates will then be invited to conduct a 30-minute telephone interview. A final summary meeting will be convened to select final candidates for invitation to the Board. The final board will be selected with a goal of diversity across several key domains: 1) time in treatment or recovery; 2) treatment received (e.g., VHA/non-VHA, MOUD/other types of treatment); 3) age; 4) gender; 5) race/ethnicity; 6) service era/service branch; 7) education. No previous research engagement experience will be required.

The VEB will begin in the first half of the first year of the CONDUIT project with a 2-day, in-person meeting held in conjunction with the CONDUIT kick-off meeting. Members of VEB will meet once monthly for 60-90 minutes by teleconference to provide feedback to individual EF teams and on the overall Consortium. Before each monthly meeting, the presenters will submit a brief project update and 2-3 questions for discussion. VEB members at a given site will be encouraged to meet in-person for these monthly meetings. Feedback will be collected from Veterans and investigators 1 week and 3 months after each meeting. The Board will hold an annual one-day in-person meeting in conjunction with a project-related meeting. All meetings will be facilitated by an experienced facilitator. Local PIs will communicate current project status to their local VEB members at least monthly and solicit feedback on progress, barriers and dissemination. Veterans will be compensated for their time at a rate of $599 annually and their travel costs for the annual meeting will be covered.

Implementation Core: The primary aim of the Implementation Core is to work across CONDUIT to ensure standardized measurement of implementation activities and coordinate with the Quantitative/Economic Core to ensure measures are aligned with key implementation and economic outcomes. To ensure project efforts are maximally Veteran-centered, the Implementation Core will work closely with the VEB to engage Veterans in the efforts of EF/internal facilitation teams. For example, if leadership and providers are strongly resistant to change, then the VEB will engage regularly with them as part of the facilitation team's work, particularly in the early stages. This approach is similar to methods used in CBPR, and Dr. Frank's expertise in incorporating Veterans into work will be instrumental to the successful integration of Veterans into implementation teams.

Quantitative/Economic Core: The Quantitative/Economic Core will support assessment of key outcomes across the 64 sites aligned with the RE-AIM framework and quantify the value of the proposed IF efforts through measurement of implementation costs. The overarching goal of the Quantitative/Economic Core will be to harmonize definitions and quantitative data extraction, accounting for potential differences in the individual facilities. A distributed effort model will be utilized in which a core analytic team at the Seattle-Denver COIN led by Dr. Zeliadt will be supported by analytic staff working with each of the local mPIs. Code will be collaboratively developed and reviewed across all analytic team members, and tasks will be distributed across the national team as needed (e.g. analysts in Los Angeles may be supporting production of audit and feedback reports for Maine sites). This effort is modeled after other national partnered evaluation efforts and is efficient

in reducing duplication of effort while providing flexibility in supporting individual investigators. We will use SQL and R analytic software, and coding activities will be conducted in a shared VINCI operations workspace.

D.3. Specific Aim 1: Implement expanded access to evidence-based MOUD in 57 sites in 6 VISNs using evidence-based IF activities, tailored based on CFIR-guided formative evaluation.

D.3a. Evidence-based, effective treatment: Medication treatment of opioid use disorder

OUD is a problematic pattern of opioid use leading to clinically significant impairment or distress. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)[6] defines OUD as the presence of at least 2 of 11 criteria, such as adverse consequences, craving and loss of control in a 12-month period. OUD may take any of several different forms: use of illicit heroin or fentanyl, non-medical use of prescription opioid medications such as oxycodone, or iatrogenic OUD in the setting of LTOT prescribed for chronic pain.

Medication treatment for OUD (MOUD) is an essential component of evidence-based care. Strong evidence supports MOUD, and they are the "gold standard" treatments for OUD in VHA.[7] MOUD have been shown to substantially decrease risk for all-cause mortality and overdose mortality in people with OUD.[8] The treatment of OUD involves several FDA-approved, VA-formulary medications including injectable naltrexone, methadone, and buprenorphine/naloxone and buprenorphine (hereafter collectively termed buprenorphine). Methadone has been used successfully for more than 40 years to treat OUD but must be dispensed through specialized opioid treatment programs.[9] Unlike methadone, buprenorphine and naltrexone for OUD can be prescribed in settings such as primary care, specialty care, inpatient and ED settings. Buprenorphine is a partial opioid agonist. It binds to opioid receptors but activates them less strongly than full agonists (such as heroin) do, reducing cravings and opioid withdrawal symptoms in a person with OUD without producing euphoria. To qualify to prescribe buprenorphine for OUD, physicians must meet one of several requirements; most providers qualify by completing no less than 8 hours of training through an accredited training organization in the diagnosis

Table 2. CONDUIT implementation sites

Implementation Site	Phase 1	Phase 2	VAMC	CBOC	Q2 FY19 OUD prevalence	Q2 FY19 MOUD rate*
NATIONAL					1.51%	23.7%
VISN1					2.47%	34.1%
VA Bedford HCS	X	X	1		3.04%	33.8%
VA Boston HCS		X	1		2.46%	36.6%
VA Connecticut HCS		X		2	2.38%	40.3%
VA CW Mass. HCS		X		2	2.93%	27.1%
Manchester VAMC	X	X	1	3	1.41%	32.0%
VA Maine HCS	X	X		4	1.76%	26.6%
VISN7					1.06%	19.7%
Birmingham VAMC		X	1	1	1.64%	20.5%
Columbia VA HCS		X	1	2	0.85%	24.2%
C. Alabama VA HCS		X	1	1	0.54%	11.0%
VISN19					1.24%	19.2%
VA E. Colorado HCS	X	X	1	2	1.14%	12.0%
Salt Lake City VA HCS	X	X	1	2	1.40%	16.9%
E. Oklahoma VA HCS		X	1	1	1.41%	12.9%
Okla. City VA HCS		X	1	1	1.15%	35.4%
Grand Junction VAMC		X	1	1	0.63%	8.5%
Montana VA HCS		X	1	1	1.02%	26.6%
VISN20					1.57%	23.4%
Boise VAMC		X	1		0.94%	20.8%
VA Puget Sound – American Lake		X	1	1	1.45%	38.3%
VA Portland HCS		X	1	1	1.24%	21.9%
Alaska VA HCS	X			4	1.15%	19.9%
S. Oregon VA HCS	X			2	2.18%	15.0%
VISN22					1.37%	22.4%
S. Arizona VA HCS	X	X	1		1.23%	31.1%
Phoenix VA HCS	X	X	1	2	1.26%	27.9%
Greater LA VA HCS		X	1		1.62%	30.7%
Loma Linda VA HCS		X	1		0.96%	16.2%
VA San Diego HCS		X	1		1.16%	13.6%
N. Arizona VA HCS		X	1		1.46%	20.8%
VA Long Beach HCS		X	1		1.50%	13.1%
N. Mexico VA HCS		X	1		1.52%	21.4%
VISN23					0.76%	20.6%
Iowa City VA HCS	X	X	1		0.68%	21.5%

*Data from VHA Academic Detailing Opioid Use Disorder Dashboard (accessed 5/23/19)

and management of OUD. The vast majority of healthcare providers, nationally and in VHA, have not completed this training and are therefore prohibited from prescribing buprenorphine for OUD.[10] Naltrexone is an opioid antagonist and by works by blocking the activation of opioid receptors. Instead of controlling withdrawal and cravings, it treats OUD by preventing any opioid drug from producing rewarding effects such as euphoria. An injectable, long-acting formulation of naltrexone was FDA-approved in 2010 and may be appropriate for some patients with OUD. No additional training or certification are required for non-specialty providers to prescribe naltrexone.

D.3c. Implementation sites: CONDUIT will engage a total of 57 sites (24 medical centers and 33 CBOCs; **Table 2;** see **Appendix 4** for additional detail). Selection of these sites was guided by our VISN partners and informed by Phase 1 experience.

D.3b. Brief summaries of CONDUIT programs by clinical setting:

Primary care: Buprenorphine delivered in primary care is associated with decreased opioid use, higher quality of care, and improved quality of life.[11-13] Thus, evidence-based models of primary care-based OUD treatment, namely the Medical Management model[14] and the Nurse Care Management model,[15] are the focus of CONDUIT implementation in primary care settings. In this program, the EF team works collaboratively with internal facilitation teams to expand the availability of MOUD in VHA primary care settings by increasing the number of providers/teams prepared to initiate and manage evidence-based MOUD.

Specialty care: This program prioritizes patients on LTOT for chronic pain, as many in this sub-population already have OUD, are at high risk for developing it, or may be experiencing negligible benefit. Consistent with VA/DoD guidelines[16] and a mandate from the Comprehensive Addiction and Recovery Act of 2016,[17] we developed a multi-disciplinary clinical program—the Opioid Reassessment Clinic (ORC)[18-20]—that assesses benefits and harms, seamlessly initiates MOUD when OUD is diagnosed, and ensures access to evidence-based non-opioid treatments for pain.

Acute care (inpatient / emergency department): This program capitalizes on ED visits or hospitalization as critical intervention windows by engaging ED physicians and hospitalists to reduce opioid overprescribing and increase uptake of MOUD while reaching patients at high-risk due to medical comorbidities. We integrate evidence-based and established consensus approaches to opioid prescribingl,[21] use of non-pharmacologic pain treatment,[22] and diagnosis and treatment of OUD in hospitalized patients,[23-25] into a coherent approach that can be adapted to medical centers with and without specialty pain or addiction medicine services.

Telehealth: While there is an inadequate number of providers in rural areas certified and/or trained to provide MOUD,[26] telemedicine has been found to be as effective as in-person visits for treating a range of mental illnesses, and for prescribing buprenorphine and other MOUD.[27,28]

Each of the EF teams will work collaboratively with internal facilitation teams to deploy the core IF activities outlined in Table 3 as well as additional IF activities noted. Evaluations performed by the Implementation Core, in partnership with each facilitation team (e.g., formative evaluation, survey, IF logs as outlined in D4 below), will identify whether any adaptations need to be made to the IF activities. For example, if the Telehealth EF team identifies technical issues as a barrier to implementation, they will incorporate technical assistance into IF, and it will be added to their IF log for tracking its use during implementation.

Table 3. Core and Site-specific IF Strategies

Core IF activities (used across all facilitation teams)
Monthly site calls between external and internal facilitation teams
Monthly Community of Practice calls
Internal facilitation team engages EF team to support implementation
EF team engages internal facilitation team to support implementation
Academic Detailing/Education
Problem-solving based on assessment of implementation barriers and facilitators
Developing materials and adding them to a shared library
Informing local opinion leaders, leadership, and/or administrators
Site-specific IF activities
Audit and feedback (Specialty, Primary Care)
Site-specific learning collaborative (Acute Care)
Develop incentives (Primary Care)
Conduct cyclical, small tests of change (Primary Care)
Technical assistance (Primary Care)

D.3d. Integration of implementation activities: The foundation of CONDUIT's implementation activities are the structured interactions between the four EF teams and internal facilitation teams. A core set of IF activities will be used across all facilitation teams, and EF teams will use additional ones based on the needs of their sites or clinical settings (**Table 3**). EF and internal

facilitation teams will attend a monthly Community of Practice call. This has the distinct advantage of allowing internal facilitation teams across sites to learn about the full range of CONDUIT implementation activities. For example, if an internal facilitation team working the Specialty Care EF team is interested in moving beyond ORC and enhancing access to MOUD in the inpatient setting, they can learn from the Acute Care EF team. The Implementation Core will provide consultative expertise on the IF activities used by each facilitation team.

D.4. Specific Aim 2: Evaluate Implementation Facilitation using a mixed methods approach to assess Reach, Effectiveness, Adoption, Implementation, and Maintenance.

D.4a. Overview: The CONDUIT evaluation of IF will consist of two strategies: a mixed methods formative evaluation to gain site-level, granular understanding of implementation barriers and facilitators and guide IF tailoring, and quantitative outcomes evaluation guided by the RE-AIM framework.

D.4b. Conceptual framework: Two complementary frameworks will guide our evaluation of CONDUIT – the Consolidated Framework for Implementation Research[29] (CFIR) and the RE-AIM framework,[30] similar to previous work led by Dr. Midboe.[31] The CFIR will guide formative evaluation (**Table 4**). Within the RE-AIM framework, we will assess Reach, Effectiveness, Adoption, Implementation, and Maintenance as they apply to project work within each clinical setting (**Table 5**).

D.4b. Formative evaluation: A formative evaluation will be conducted at different stages of implementation and will assess Implementation and Maintenance outcomes (**Table 5**);[32] see **Appendix 5** for a detailed timeline. For the developmental (pre-implementation) formative evaluations, the EF and internal facilitation teams and their staff will be responsible for collecting data related to facilitators and barriers and using rapid analysis techniques.[33] They will be trained on rapid analytic techniques, requiring completion of templated matrices to identify key themes. If needed, an Implementation Core member will be available to attend calls and assist with completion of these evaluations and matrices. The EF team will conduct the developmental formative evaluation on a site-specific call during the pre-implementation period. The Implementation Core will develop a relatively briefly semi-structured interview guide of the core CFIR constructs (**Table 4**), and

Table 4. Core CFIR Constructs Mapped to Implementation Facilitation Activities

Implementation Needs	CFIR Domain	CFIR Constructs	Implementation Facilitation (IF) Activities
Engagement of key clinical stakeholders	Intervention characteristics Inner setting	▪ Adaptability ▪ Design quality & packaging ▪ Complexity ▪ Leadership engagement ▪ Tension for change ▪ Relative priority	▪ Academic detailing ▪ Informing local opinion leaders, leadership, administrators ▪ Problem-solving ▪ Regular contact with IF team ▪ Community of practice
Coordination of care across clinical settings	Inner setting	▪ Networks and communications ▪ Ease of access to information/knowledge	▪ Developing materials (e.g., note templates) and adding them to a shared library ▪ Academic detailing ▪ Problem-solving
Providers believe engaging in MOUD is better than not engaging	Characteristics of individuals	▪ Knowledge and beliefs about the intervention ▪ Self-efficacy	▪ Academic detailing ▪ Informing local opinion leaders, leadership, administrators

incorporate additional items based on unique needs of facilitation teams in differing clinical settings. Given the large and rapid scale of implementation, it is not feasible to conduct individual interviews of stakeholders, transcribe, and analyze the transcriptions.

For progress-focused formative evaluations, we will collect data in the monthly IF logs (**Appendix 6**), which is the same approach the larger SCOUTT initiative is using. It allows the facilitation teams and Implementation Core to track progress and address new barriers on monthly calls as they arise. The Implementation Core will provide monthly reports on the IF logs to each of the facilitation teams. For the interpretive evaluation, the Implementation Core will use stratified random sampling to select implementation sites for interviews post-maintenance. Approximately 3 to 5 sites per EF team (strata) will be selected randomly for in-person/phone interviews. We aim to interview key stakeholders, including Veterans, at 15 to 25 sites, with a target of approximately 5 participants per site, resulting in a final sample of 75 to 125 participants. We will use a CFIR-

guided semi-structured interview guide that will designed to capture barriers, facilitators, and adaptations made to the original intervention and implementation activities. Although we plan to use audio recordings, they will not be transcribed given the rapid timeline of this project. We will use extensive notes and the recordings as needed to conduct a rapid analysis and pull illustrative quotes. Rapid analysis has been shown to produce equivalent findings to more resource-intensive, in-depth analytic techniques.[33] The Implementation Core, in collaboration with the qualitative experts (e.g., Drs. Drummond and Mattocks) across multiple settings, will conduct this evaluation.

D.4c. Tracking IF activities and other implementation strategies: The Implementation Core will rely on a standardized REDCap tracking log (see **Appendix 6** for sample tracking log) that EF and internal facilitation teams will complete monthly during the implementation phase, allowing for efficient data aggregation, cleaning, and analysis. See **Table 3** for core IF activities that will be captured across all sites as well as site-specific IF activities that will be captured in a modified REDCap tracking log that includes additional activities. The final format of these logs will be developed in partnership with the Quantitative/Economic Core so that they can be used to calculate return on investment in facilitation activities. The Quantitative/Economic Core will be responsible for aggregating and cleaning all data to be used for analyses related to implementation and cost, but in close partnership with the Implementation Core. If pre-implementation and implementation formative evaluation activities reveal barriers that require IF activities to be modified, then the REDCap tracking logs will be modified accordingly. For example, if an EF team is not using audit and feedback, but it is clear that a clinical setting does not perceive the need to change, they may add audit and feedback to their IF activities. We decided against using a more formal tailoring approach[34] because those require more time and resources and our operational partners have a more rapid timeline in mind, although we can rely upon them should the partners prefer a more systematic approach.

Given that some site staff may rely on implementation strategies as part of local QI efforts that may fall outside of the IF activities measured in the logs, we will also ask internal facilitation teams to complete a web-based survey at baseline (pre-implementation) and then at the end of each study year. This survey captures a wide variety of implementation strategies beyond IF activities and has been used previously to evaluate implementation of a national initiative focused on engaging veterans with hepatitis C in treatment.[35] The lead author, Dr. Shari Rogal, part of the Implementation Core, will assist with adapting and analyzing the Expert Recommendations for Implementing Change (ERIC) survey for the needs of CONDUIT (see **Appendix 7** for sample survey). Dr. Rogal and her team will summarize data from each site for the Implementation Core so that the latter can provide feedback to the EF teams about any implementation strategies to track monthly as part of IF activities. This data summary will include descriptive statistics about individual strategies and clusters of strategies used at the site over time. Correlational analyses will be conducted to assess the associations between strategies (individual strategies, number of strategies used, and clusters) and RE-AIM measures. This will allow us to understand which strategies are associated with improved site-level outcomes more broadly. Both the IF logs and the ERIC survey will allow us to assess Implementation outcomes (**Table 5**).

D.4d. Quantitative evaluation:

D.4d1. Cohort identification: To assess impact of IF efforts, we will identify a cohort of at-risk patients—those who have OUD but are not prescribed MOUD—to track their outcomes over time. Methods to identify at-risk patients will be harmonized across all implementation sites. These will include use of available data in the Corporate Data Warehouse (CDW), including medication/pharmacy records (inpatient and outpatient), toxicology screen results, primary care and mental health care utilization, inpatient admissions, comorbidity data, recent treatment and service use such as alternative pain treatments for the subgroup of MOUD patients with pain, and other information to determine at-risk Veterans appropriate for referral for MOUD. We will compare outcomes at each implementation site during the post-implementation period to outcomes prior to implementation, using each site as their own control. Each site will have a defined implementation start date and an implementation start-up period of 3-months in which outcomes will not be attributed to either the pre- or post-implementation period. For sites that have booster or additional implementation efforts, additional start dates of those efforts will be tracked. Harmonization of definitions for at-risk Veterans will also facilitate comparing sites across VHA not participating in MOUD-related implementation activities to examine secular trends and to rapidly identify targets for expanding the implementation efforts for MOUD referral in additional VISNs. A person-years approach will be used as Veterans may be at-risk and eligible for referral for MOUD at multiple time points during the three-year project.

D.4d2. Implementation/clinical outcomes: The Quantitative/Economic Core will work with the Implementation Core on two primary areas: (1) ensuring accuracy and consistency of assessments of RE-AIM

outcomes across CONDUIT, with the Quantitative/Economic Core focused on Reach, Effectiveness, and Adoption; and (2) assisting in tracking and assessing frequency and duration of IF activities (e.g., logs of time related to implementation efforts that includes phone calls, meetings, education) across EF teams so that costs can be assigned to implementation efforts (**Table 5**). **Reach**: The primary reach outcome is the use of MOUD among at-risk individuals. At each implementation site we will identify at-risk individuals during the pre- and post-implementation periods, using modified criteria from the MOUD dashboard. Using the cohort definitions described above, each at-risk Veteran will be assigned an index date and at-risk person-years will be determined for both pre- and post-implementation periods as appropriate. The outcome will be calculated based on filling a qualifying prescription for buprenorphine or naltrexone. We note that this outcome is similar to the SCOUTT evaluation, however, the SCOUTT evaluation focuses on individual provider prescribing practices because providers were the focus of the intervention. In CONDUIT, any fill of buprenorphine or naltrexone will be counted because the focus on the implementation efforts are on the entire site, not individual provider practices. **Effectiveness**: Our primary effectiveness outcome will be the number of at-risk Veterans who participate in a full course of MOUD. This analysis will be similar to the Reach analysis, but will focus on the date of completing a full course of MOUD. Secondary outcomes will include rates of hospitalizations and ED visits related to OUD/SUD for Veterans who utilized MOUD compared to Veterans who do not use MOUD during the pre- and post-implementation period. Using a person-years approach we will identify at-risk individuals and determine the relevant time that they are at risk of potential adverse events. Hospitalization and ED visits with a primary or secondary diagnosis code of OUD/SUD will be identified using established methods, and will be guided by SCOUTT evaluation. We also propose examining the effect of implementation on a) total opioid doses; b) receipt of overlapping opioid-sedative prescriptions, and c) opioid-related or other

Table 5. Outcomes Mapped to RE-AIM Constructs

RE-AIM Construct	Primary Outcome(s)	Secondary Outcomes
Reach	Number of patients with OUD initiating MOUD during the implementation period in implementation sites[1]	
Effectiveness	Number of patients with OUD retained on MOUD at 90 days and 180 days during the implementation period (i.e. treatment retention)[1]	▪ Hospitalizations and ED visits related to OUD post-implementation[1] ▪ Opioid-related or other drug overdoses in patients with OUD post-implementation ▪ Opioid dose for patients on LTOT post-implementation[1] ▪ Concomitant opioid-sedative prescriptions post-implementation[1]
Adoption	Number of providers (and/or clinics) providing MOUD post-implementation, stratified by type of provider, clinical setting[1]	Number of VISTA x-waivered providers post-implementation [1]
Implementation	▪ Facilitators and barriers to implementation[2] ▪ Fidelity, as measured by frequency and duration of Implementation Facilitation strategies[3] and other implementation strategies[4] ▪ Cost of implementation[1,3]	Variation in facility-level use of implementation strategies over time
Maintenance	▪ Summary of facilitators and barriers at implementation clinics 6 months post-implementation[2] ▪ Elements of program maintained, including adaptations[2] ▪ Number of VISTA x-waivered and prescribing providers 6-month period post-implementation	Number of OUD patients receiving MOUD 12-24 months after implementation

Data source: [1]CDW; [2]Semi-structured interviews; [3]REDCap facilitation tracking logs; [4]REDCap survey of ERIC strategies.

drug overdoses.[36] Coding strategies will be adapted as necessary to address Cerner adoption and CHOICE and MISSION use of community care records. **Adoption**: Outcomes focused on provider adoption of MOUD will be assessed. For each implementation site we will identify providers and assess the proportion of those providers who provide MOUD or who are credentialed to provide MOUD (VISTA X-waivered providers). Changes in these proportions between the pre- and post-implementation periods will be assessed as an indicator of implementation success.

D.4d3. Analytic approaches: Our non-randomized evaluation design is necessary because randomization was not possible due to our partnership with VISN leadership and outreach efforts for individual site participation. A key goal is to demonstrate to VISN and facility leadership the value of implementation; therefore, we will estimate implementation outcomes for each of our individual sites and pool implementation sites as appropriate. This will allow us to provide descriptive quantitative information about individual implementation efforts to be combined with qualitative findings about implementation success. Although these analyses will allow for some comparison of effectiveness across individual team efforts, we do not propose formal direct comparisons of teams. There are several statistical limitations to the non-randomized evaluation design that we will address through pragmatic approaches. To account for secular trends in increased use of MOUD that may not be due to our implementation efforts, we will track other related implementation efforts such as initiation of additional SCOUTT efforts, and monitor national dashboards to generate a secular rate among non-intervention sites. We will use this secular rate and test to determine if CONDUIT activities increase use of MOUD above this rate, rather than a null hypothesis of 0. Because we are calculating outcomes for each of the individual sites, the risk of a spurious finding due to multiple testing is possible. We will use caution when interpreting any moderate p-values (e.g. 0.01 to 0.05) as significant. For ease in reporting to VISN and site leadership, we will utilize direct pre- and post-implementation period comparisons. Additional multivariate adjusted analysis using time-to-event semi-parametric methods will also be explored. These models will focus on initiation of MOUD treatment, and will allow for examining clinical and demographic characteristics, including time from initial OUD diagnosis.

D. 4d4. Power and sample size: Small facilities will have limited power to detect small implementation effects, and evaluating implementation success for these sites will incorporate mixed methods also using qualitative findings. The ability to pool sites using similar implementation strategies will ensure our evaluation has adequate power. **Table 6** highlights that post-implementation follow-up periods that include samples of 200 patients will allow for detection of meaningful effect sizes in the 0.2 range.[37,38]

Table 6. Power calculation

Estimated Number of At-Risk Veterans in Post-Implementation Period	50	75	200	750
Effect size (with power=0.80)	0.40	0.32	0.20	0.10

D.5. Specific Aim 3. Estimate the cost of implementation and return on investment

D.5a. Overview: We use well-established methods with which our team has extensive experience to estimate the costs of implementation and return on investment with the primary goal of helping VISN leadership evaluate adoption, scale and spread of the clinical programs we implement.

D.5b. Economic outcomes: The primary economic outcome across all projects is cost per additional Veteran initiating MOUD. This includes both implementation costs and costs of delivering the clinical program/intervention. Return on investment will also be calculated and will include total costs including concurrent/downstream treatment and medical care costs.

D.5c. External facilitation costs: Cost and expenses associated with EF activities will be directly captured through monitoring of expenses associated with QUERI funding as well as VISN contributions. We anticipate that nearly 100% of support from QUERI will be allocated to implementation activities and tracked across the implementation efforts. Efforts that cannot be allocated individually to a specific clinical program (e.g. general interviews with national stakeholders) will be split equally across the relevant EF teams. Implementation staff will be asked to log collateral hours of effort they incur in excess of the QUERI and VISN support. Each month each investigator and project coordinator on the Implementation Core and each EF team will be asked to confirm that the effort allocated to the project (e.g. 10% FTE) and report how those hours were allocated to mutually exclusive implementation activities such as outreach/coordination with sites, planning, training, technical assistance, feedback, evaluation. This effort will be conducted in coordination with the VISN20 Tele-

Pain PII (PI Zeliadt), which is focusing on assessing the implementation costs associated with facilitation of expanding Tele-Pain to CBOCs in Alaska and Oregon. A recent effort by Dr. Zeliadt of the QUERI partnered evaluation effort assessing implementation costs associated with the adoption of the Whole Health System of care utilized a similar strategy. A validation step in which implementation activities were re-reviewed with the guidance of a qualitative interviewer found this approach to be robust and reflective of actual implementation effort. Notably, some sites identified costs originally logged as implementation to be reclassified as care delivery activities or other non-related costs of the implementation effort. For this project, we will incorporate brief reviews with key personnel to help ensure appropriate attribution to implementation efforts.

D.5d. Internal facilitation/site costs: The Implementation and Quantitative/Economic Cores will rely on parallel efforts to assign costs to implementation efforts at each site, an approach we have refined in our experience with several large projects.[39] In conjunction with the Implementation Core, we will develop items to be included in the monthly implementation log tracking using REDCap. These logs will be completed by sites' internal facilitators to collect data on personnel (e.g. time spent) and non-personnel costs (e.g. travel, supplies, equipment) associated with the implementation efforts. Additional semi-structured interview items capturing personnel time associated with any implementation burdens, as well as items for the 12-month post-implementation survey will also be developed based on the tracking logs and interviews.

D.5e. Clinical program costs: In order to identify specific delivery costs of each clinical program, we will utilize a micro-costing approach in which qualitative assessment of providers' time associated with the study is informed by time and motion studies.[40] Process maps of each clinical activity will be generated for each of the five programs. Dr. Whittington will train internal facilitators to perform time and motion studies as needed to identify estimates of typical times to complete specific program activities. Dr. Whittington is currently leading the effort to calculate the cost of implementation for the national implementation of the SCOUTT initiative. Methods and tools developed for that evaluation will translate to this work.

D.5f. Downstream/concurrent costs: Recent literature has found the additional treatment costs of MOUD are offset by lower utilization of medical services.[41] To calculate the cost offsets associated with MOUD in VHA, we will conduct an ancillary analysis of the cost trajectories between patients treated with and without MOUD. This will be a national analysis to ensure high numbers of MOUD recipients. We will first identify national sample of Veterans eligible for MOUD and the subgroup of those treated with MOUD in 2018. We will extract each patient's healthcare costs using inpatient, outpatient, and pharmacy utilization between 2016 to 2019, which will be used to develop of longitudinal cost trajectories similar to prior work led by Drs. Zeliadt and Whittington in the areas of complementary and integrative health. To identify the cost or cost savings attributable to initiation of MOUD, we will compare the costs over time for those patients that are treated with MOUD to those patients that are not treated with MOUD using a difference in differences specification. A generalized gamma regression with log link will be specified. Personnel from HERC are included in the Quantitative/Econ Core to help identify all relevant clinical care costs, as well as to assist in capture all potential utilization activities delivered through community care activities.

D.5g. Implementation, clinical and cost outcomes analysis: We will aggregate the personnel time and financial resource data collected to calculate the total cost of IF for each implementation effort. Using an "intent-to-treat" approach with person-years as the unit of analysis, we will calculate separate multilevel mixed models for each clinical/RE-AIM outcome and cost outcome. We will pool implementation efforts across clinical settings as appropriate (e.g. all primary care implementation efforts will be combined into a single analysis). Exposure to IF implementation-as-usual conditions will be based on timing and randomized as appropriate to each project, such as stepped-wedge designs. We will account for clustering of patients across multiple exposure periods, as well as nesting of patients within clinical settings. This approach will allow assignment of at-risk Veterans to different facilitation levels as well as control for secular trends in pre-post implementation efforts. At-risk Veterans who were initially exposed to implementation-as-usual condition will be censored relative to outcome assessment for that phase if they or their provider is exposed to IF. The model will include an indicator variable for implementation and clinic program status, and an interaction between time and this indicator variable to assess for the independent effect of implementation separate of secular trends. Longer term costs, such as 12-month medical care cost trajectories following exposure to potential referral to MOUD will be included as appropriate. Markov models based on the outcome of the point estimates from the clinical and economic outcome models will be developed to estimate confidence intervals of key measures such as cost per additional at-risk patient receiving MOUD.

E. Partnerships

Our primary partnership will be with the OMHSP's Substance Use Disorder group, led by Dr. Karen Drexler. The Principal Investigator (PI) team has a longstanding history of collaboration with Dr. Drexler's group as well as our other key operational partners – the National Pain Management Program Office (Dr. Friedhelm Sandbrink), Primary Care Operations (Dr. Angela Denietolis), and Pharmacy Benefits Management (Dr. Fran Cunningham) and its Academic Detailing Service (Dr. Melissa Christopher). Our collective, Phase 1 work and the proposed work was made possible by the support of a highly collaborative, responsive group of Network Directors: Ryan Lilly, MPA (VISN 1); Leslie Wiggins (VISN 7); Ralph T. Gigliotti, FACHE (VISN 19); Michael J. Murphy, FACHE (VISN 20); Michael Fisher (VISN 22); Robert P. McDivitt, FACHE (VISN 23).

F. Study team and relevant experience

The CONDUIT leadership team brings together a multidisciplinary team of implementation experts, researchers and clinicians. The expertise and broad experience of this team will allow CONDUIT to work effectively across the continuum of care at implementation facilities using evidence-based IF to leverage resources and address challenges for individual implementation sites. The EF teams will be led by CONDUIT Principal Investigators supported by the Cores (**Table 7)**. All members of the leadership team have been integrally involved in Phase 1 activities and have established partnerships with key collaborators at the VISN and facility levels as described above. Individually, the CONDUIT leadership team has extensive experience supported by focused training in Implementation Facilitation. Dr. William Becker (corresponding PI) has extensive experience with pragmatic effectiveness and implementation research in both OUD and chronic pain and has led several completed and ongoing multi-site projects.

Local resources at CONDUIT leadership team facilities are well-suited to contribute to the team's ability to succeed and include: QUERI centers in West Haven, Iowa City, Denver, Los Angeles, Seattle and Palo Alto; HSR&D Centers of Innovation at all seven CONDUIT leadership facilities; VISN20 VA Center for Excellence in Substance Addiction Treatment and Education (CESATE); VISN19 Vulnerable Veteran Integrated PACT (VIP) Program at the VA Salt Lake City; VISN22 QUERI Complementary and Integrative Health Evaluation Center; and VISN7 Mental Illness Research, Education and Clinical Center (MIRECC). The CONDUIT leadership team is also ideally positioned to ensure productive collaboration with several related national resources and initiatives:

Stepped Care for Opioid Use Disorder (SCOUTT) Initiative: Dr. Adam Gordon (mPI) and Dr. Eric Hawkins (Co-I) have leadership roles in the implementation and evaluation of SCOUTT.

Table 7. CONDUIT Study Team

Core	**Key Personnel**
Veteran Engagement	Joseph Frank, MD, MPH
Implementation	Amanda Midboe, PhD (Imp. Sci.) Mark McGovern, PhD (Imp. Sci.) Hildi Hagedorn, PhD (Imp. Sci.) Allyson Varley, PhD (Qualitative) Kristin Mattocks, PhD (Qualitative) Karen Drummond, PhD (Qualitative)
Quantitative / Economic	Steve Zeliadt, PhD (Health Economist) Melanie Whittington, PhD (Health Economist)
Clinical setting	**External Facilitation team**
Specialty care	William Becker, MD (Internist) Ellen Edens, MD (Psychiatrist) Erica Abel, PhD (Informaticist) Sara Edmond, PhD (Psychologist)
Telehealth	Marc Rosen, MD (Psychiatrist) David Moore, MD (Psychiatrist) Nicole Brunet, PharmD (Pharmacist) Dora Wischik, RN, MSN (Nurse) Jennifer Bergmann, PsyD (Psychologist)
Primary care	Evelyn Chang, MD (Internist) Joseph Frank, MD (Internist) Adam Gordon, MD (Internist) Eric Hawkins, PhD (Psychologist) Emily Williams, PhD (Imp. Sci.) Rebecca Oberman, MSW
Inpatient / Emergency Department	Hilary Mosher, MD (Hospitalist) Stefan Kertesz, MD (Internist) Comilla Sasson, MD, PhD (Emergency physician)

Underline denotes External Facilitation leads

Multiple CONDUIT team members are engaged within their respective VISNs with SCOUTT implementation

HSR&D Pain/Opioid Consortium of Research (CORE): With its creation in May 2019, this HSR&D CORE will play a key role in shaping HSR&D research priorities. Dr. Becker (mPI) is 1 of 3 co-directors of this group.

The Opioid Safety Initiative:[42] Launched in 2013, this system-wide initiative leveraged the VA's data capabilities and organization to provide facility- and provider-level data in inform opioid safety efforts.

The Medication for Addiction Treatment in the VA (MAT-VA) Initiative: A national consult service for VA clinicians which, since 2007, has provided mentoring and resources for VA clinicians. The MAT-VA Initiative is directed by Dr. Adam Gordon (mPI) at the Salt Lake City VA

G. Management plan and timeline

G.1. Management plan: Dr. William Becker will serve as corresponding PI and will lead the CONDUIT Coordinating Center, responsible for overseeing and ensuring integrated, productive interactions among the Cores and among the Cores and the implementation sites. Dr. Joseph Frank will lead the Veteran Engagement Core. He will be responsible for coordination of recruitment, orientation and prospective administrative support for this group. He will ensure collaboration and alignment with other ongoing Veteran engagement initiatives. Dr. Amanda Midboe will lead the Implementation Core and has extensive experience working as an implementation scientist and leading implementation work across multiple projects. Drs. Steve Zeliadt and Melanie Whittington will lead the Quantitative /Economic Core. Dr. Zeliadt will be responsible for working with the Implementation Core to identify direct analytic support needs. He will oversee analytic staff who will extract and clean data from CDW and REDCap. Dr. Whittington will oversee economic activities including calculating the cost of implementation efforts, estimating the potential cost savings of initiation of MOUD, and calculating the return on investment of each project.

In the first six months of the project, there will be at least bi-weekly phone meetings for among the Core leads and Dr. Becker to ensure coordination across External Facilitation teams (**Table 7**). After six months, these meetings will transition to monthly meetings unless more frequent meetings are necessary. There will also be regular email and telephone contact. The Implementation and Quantitative/ Economics Core will meet weekly with their respective teams. Our operational partners will serve as our Strategic Advisory Group, including 1 to 2 Veterans from the CONDUIT VEB. They will guide the consortium with respect to VHA priorities. There will be a monthly CONDUIT-wide teleconference for all project personnel. Twice annually, the project-wide meeting will include the Strategic Advisory Group. See the Multiple PI Plan for further details about the organization, responsibilities and plans for integration of implementation efforts across the EF teams.

G.2. Deliverables: In Phase 2 of this Partnered Implementation Initiative, CONDUIT will build on Phase 1 deliverables to generate several products that will advance OUD care more broadly in VA.

Implementation toolkit: CONDUIT will integrate and iteratively refine current Phase 1 implementation toolkits to comprehensively address the continuum of OUD care (Specialty Care, Primary Care, Acute Care, Telehealth) and improve access and usability by VA stakeholders. For example, the VISN1 External Facilitation team led by Dr. Marc Rosen and Dr. David Moore have created and distributed an implementation toolkit to guide MOUD by telehealth. This 54-page Word document covers multiple key domains including clinical, logistical and legal considerations related to buprenorphine prescribing using VHA telehealth.

Training: In Phase 1, all CONDUIT EF teams provided training to key personnel at implementation sites. Buprenorphine is an important tool for expanding MOUD provision across the continuum of care but is currently restricted to providers who have completed at least 8 hours of training (**Table 1** above). For example, during Phase 1, Dr. Adam Gordon led 12 buprenorphine waiver trainings in VISN19 and nationally. In Phase 2, integration of these EF teams will provide a platform on which to harmonize and expand training opportunities, and this expanded training is a key CONDUIT deliverable.

Provider consultation or technical assistance support: CONDUIT will also leverage and expand upon existing consultation resources available throughout the VHA Medication for Addiction Treatment in the VA (MAT-VA) Initiative. CONDUIT aims to implement at more than 50 facilities, including small, rural community-based outpatient clinics. Longitudinal support and consultation resources will be a key deliverable to support evidence-based OUD care, especially at these CBOCs.

G.3. Dissemination: We will provide quarterly briefings to QUERI and key operational partners during the project period so that any preliminary information on effective strategies can be disseminated promptly. We will disseminate our findings and products to the VA clinical community through established MAT-VA Initiative newsletters, email groups, and cyberseminars. We will also disseminate our findings to the scientific community by publishing our findings in implementation and substance use disorders journals including

publications reporting the quantitative, formative evaluation and cost and budget impact findings. We will also present our finding to VA and non-VA audiences at meetings such as AcademyHealth, VA HSR&D, and Addictions Health Services Research. We expect multiple manuscripts will be published, both at the level of the Consortium as well as more focused publications at the level of the External Facilitation team. Building on team members' involvement in prior and current multi-site projects, we will adhere to an explicit process for coordinating and sharing authorship of peer-reviewed manuscripts and other dissemination efforts (See **Multiple PI plan** for additional details on project governance).

G.4. Future directions: In year 3 of CONDUIT, we will compete for additional funding to support national expansion as Phase 3 of this Partnered Implementation Initiative. CONDUIT's robust partnerships with national and VISN leadership as well as its collaboration with concurrent, related VHA initiatives will ensure that CONDUIT is prepared to expand on the successes of Phase 2 to implement the evidence-based, effective practice of MOUD across the VHA continuum of care nationally.

Table 8. CONDUIT Gantt Chart

	FY20				FY21				FY22				FY23	
	PII Phase 2													
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Implementation														
Launch Phase 2 (n of sites)		10	13		13									
Implementation Facilitation														
Evaluation														
Implementation data collection														
ERIC survey														
IF log														
Formative evaluation														
Quantitative data collection														
Refine cohort/risk criteria														
Extract/finalize CDW outcomes														
Implementation analysis														
ERIC survey analysis														
IF log analysis														
Formative evaluation analysis														
Quantitative/Econ analyses														
Report Phase 1 outcomes														
Preliminary Phase 2 outcomes														
Final outcomes														
Report implementation cost														
Downstream costs impact														
Implementation Reporting														
Integration														
All-project kick-off meeting														
Project-wide teleconferences														
Strategic Advisory Group meetings														
Dissemination														
Presentations to partners														
Publications, seminars														
Phase 3 funding application														