

DNP Final Project Paper

A Qualitative Approach to Examining Interdisciplinary Experiences Providing Medication

Assisted Treatment (MAT) for Opioid Use Disorder (OUD)

K. Maeve McGarry MN, FNP-C

Oregon Health & Science University

DNP Faculty Chair: Rebecca Martinez, DNP, FNP-C

Date of Submission: May 29, 2020

Abstract

Background: Opioid use disorder (OUD) is a national epidemic, with 11.4 million people in the United States admitting to misusing opioids (Substance Abuse and Mental Health Services Administration [SAMHSA], 2018). Medication-Assisted Treatment (MAT), specifically buprenorphine, is a safe and effective strategy for treating opioid use disorder in the primary care setting (SAMHSA, 2019a). Today, more than 100,000 providers have the DATA waiver required to prescribe buprenorphine for OUD in the United States (SAMHSA, 2019b). However, for a variety of reasons, including limited prescribing by DATA-waivered providers (Jones & McCance-Katz, 2018) and regional disparities (Andrilla, Moore, Patterson & Larson, 2019b), MAT is not utilized as often as it could or should be. Interdisciplinary care models hold promise for increasing patient access to MAT; however, little research has been conducted to evaluate these programs and to understand providers' perceptions of them (Lagisetty, et al., 2017).

Purpose: This goal of this project was twofold. The first aim was to contribute to an ongoing evaluation of a MAT program being implemented at two distinct Family Medicine clinics in Oregon. The second was to better understand clinician experiences with providing MAT for OUD in the primary care setting, with a focus on newly-waivered advanced practice registered nurses (APRNs).

Methods: The project consisted of the qualitative analysis of interviews of 14 care team members involved in innovative MAT programs at two Oregon Health & Science University (OHSU) Family Medicine clinics. Grounded theory was used to analyze the data, coding for themes around provider experiences providing care in a MAT program.

Findings: Common essential functions were found in the two clinic settings including: intake, induction, risk tiering and stabilization, maintenance, care coordination, and team-based, interdisciplinary care. Interviewees at both clinics described the importance of using a harm reduction approach while providing MAT in the primary care setting. Clinicians provided insight into their experience with team-based care and motivations for prescribing MAT.

Conclusion: The interdisciplinary, team-based model of MAT that was implemented at OHSU utilizes harm reduction and is a promising approach treating OUD in the primary care setting. This model addresses barriers identified in the literature, as well as supporting clinician wellbeing.

A Qualitative Evaluation of an Interdisciplinary Approach to Medication-Assisted Treatment
(MAT) for Opioid Use Disorder

Introduction

Background

The opioid epidemic refers to the current widespread misuse of both prescription and nonprescription opioids in the United States, which was ignited by the increased prescription of opioid pain medications starting in the late 1990s (U.S. Department of Health and Human Services [HHS], 2019). Data from the 2017 National Survey on Drug Use and Health showed that 11.4 million people in the United States admitted to misusing opioids in the year prior (Substance Abuse and Mental Health Services Administration [SAMHSA], 2018). Opioid misuse can have serious consequences, including overdose and death. Drug overdoses involving opioids resulted in over 47,600 deaths in the U.S. during 2017, representing a 12% increase from 2016 (Scholl, Seth, Kariisa, Wilson & Baldwin, 2019). In 2017, the director of the U.S. Department of Health and Human Services called the opioid epidemic a public health emergency and announced a 5-Point Strategy to Combat the Opioid Crisis. Included in these five strategies is “improving access to treatment and recovery services” for opioid use disorder (OUD) (HHS, 2017). Among the most effective treatments for opioid use disorder is Medication-Assisted Treatment (MAT).

MAT, also known as Medication for Opioid Use Disorder (MOUD), is the use of medications, in combination with behavioral health therapies, to provide a holistic approach to the treatment of substance use disorders. Methadone, naltrexone, and buprenorphine are the three medications that have been approved by the Food and Drug Administration (FDA) to treat OUD (SAMHSA, 2019a). Buprenorphine is a partial opioid agonist that is associated with increased

treatment retention, decreased illicit opioid use, decreased overdose risk, and reduced HIV and hepatitis C risk behaviors (Blanco & Volkow, 2019). Buprenorphine is commonly prescribed in combination with naloxone and sold under the brand name Suboxone. For the purposes of this proposal, the generic name, buprenorphine, will be used.

Since the passing of the Drug Addiction Treatment (DATA) Act in 2000, physicians (MDs) have been able to prescribe buprenorphine in the outpatient setting. However, MDs must receive a Drug Enforcement Agency (DEA) license, specific training, and a signed waiver prior to prescribing this medication for OUD. A 2015 analysis determined that there was a significant gap in need for OUD treatment and the capacity of buprenorphine-prescribing physicians and Opioid Treatment Programs (OTPs) prescribing methadone (Jones, Compopiano, Baldwin & McCance-Katz, 2015). In order to expand this capacity, the Comprehensive Addiction Recovery Act (CARA) of 2016 gave Nurse Practitioners (NPs) and Physician Assistants (PAs) the authority to prescribe buprenorphine for up to 30 patients after completing a 24-hour training (Fornilli & Fogger, 2017). In 2018, the SUPPORT for Patients and Communities Act was passed, granting NPs the authority to prescribe for up to 100 patients, and adding clinical nurse specialists, certified registered nurse anesthetists, and certified nurse midwives to the list of providers able to prescribe buprenorphine (Nursing Council of State Boards of Nursing, 2018).

These policy changes resulted in a nationwide increase in number of providers waived to prescribe buprenorphine. Today, more than 100,000 providers can prescribe buprenorphine in the United States, including 15,021 advanced practice registered nurses (APRNs) (SAMHSA, 2019b). Despite these improvements, regional disparities in care remain. Almost 30% of rural Americans, compared to 2% of the urban population, live in a county without a buprenorphine prescriber (Andrilla, Moore, Patterson & Larson, 2019b). This is particularly alarming given that

nonmetropolitan areas have higher opioid overdose rates than metropolitan areas (Mack, Jones & Ballesteros, 2017). Another area of concern is that multiples studies have found that many DATA-waivered clinicians do not prescribe buprenorphine to their patient limit, or even at all (Jones & McCance-Katz, 2018; Thomas, et al., 2017).

The Problem

Many innovative models of care have been implemented in the primary care setting to address the gap in capacity for managing OUD. However, few of these models have been rigorously studied, and many are not described in the published literature (Korthius et al., 2017). A recent systematic review found that coordinated care models involving an interdisciplinary team of prescribers and support staff were the most commonly described (Lagisetty et al., 2017). One example of a successful Collaborative Model of Care, referred to as the Massachusetts Model, includes a full-time nurse program director, nurse care managers (NCMs), a program coordinator, and generalist physicians who prescribe buprenorphine (Alford et al., 2011).

While such interdisciplinary care models hold promise, there remains a need for evaluation of these models of care so that they can be improved, modified, and implemented throughout the United States healthcare system. Since these models are already being replicated in MAT programs across the country, further evaluation of their implementation in various healthcare settings would be informative. Specifically, questions remain concerning healthcare provider outcomes, including: quality of MAT care provided, provider perceptions of care, factors related to care delivery, provider training, and provider burnout (Lagisetty et al., 2017).

Review of the Literature

In order to better understand provider experiences with MAT in the primary care setting, a literature review was completed. The search was conducted on September 18, 2019 using Pub

Med/National Library of Medicine and Scopus databases. Search terms included: buprenorphine; Opiate Substitution Treatment; Medication Assisted Treatment; Opioid Use Disorder; primary care; Health Knowledge, Attitudes, Practices; Attitude of Health Personnel; provider; nurse; nurse practitioner; doctor; and physician. More details about the search strategy and results can be found in **Appendix A**. The search focused on identifying research on MAT providers' experiences, as well as editorials and articles written by providers describing their experience working with MAT.

Common themes identified in the literature review included provider-identified barriers to prescribing buprenorphine and ways of addressing those barriers.

Identifying barriers

Among the articles identified in this literature review, five included discussions of barriers clinicians reported to providing MAT in their practices (Andraka-Christou & Capone, 2018; Andrilla, Moore, & Patterson, 2019a; Jones & McCance-Katz, 2019; Kirane et al., 2019; Madden, 2019). The barriers identified in the literature focused on training and support, financial and regulatory restrictions, patient demand and time, and stigma associated with providing MAT.

Training and support. Among twenty physicians, about half of whom were waived to prescribe buprenorphine, a lack of physician training in addiction medicine and perceptions of “difficult” patients were identified as some of the most commonly reported barriers to providing MAT (Andraka-Christou & Capone, 2018). Similarly, among providers at a large healthcare organization in the northeastern United States, barriers identified specific to prescribing buprenorphine included a lack of counseling support (Kirane et al., 2019).

Financial and regulatory restrictions. Andraka-Christou and Capone (2018) and Jones and McCance-Katz (2019) reported that clinicians identified insurance reimbursement and

insurance requirements as barriers to providing MAT. When comparing buprenorphine to the non-opioid treatment option, naltrexone, physicians reported additional barriers to prescribing buprenorphine. These included regulatory restrictions, fears related to liability, and restrictions imposed by the criminal justice system (Andraka-Christou & Capone, 2018). Kirane et al. (2019) determined that additional barriers perceived by clinicians are the belief that prescribing would not be financially viable and concerns about overdose, addiction, and diversion among their patients.

Patient demand and time. Based on surveys of newly DATA-waivered clinicians, Jones and McCance-Katz (2019) found that a lack of patient demand and time constraints were two barriers to prescribing MAT. Kirane et al. (2019) also found that clinicians listed low demand among patients as a barrier to providing MAT.

Stigma. Among forty-three buprenorphine-prescribing physicians practicing in rural communities, several reported that stigma surrounding substance use disorders was one of the greatest barriers they encountered when starting a MAT program in their practice. Within their practices, physicians found that coworkers were resistant due to fear of attracting drug users or the belief that treatment for opioid use disorder “should not involve substituting one opioid for another” (Andrilla et al., 2019a). Interview participants also reported that patients faced difficulties with pharmacies that did not carry the medications or that treated them poorly (Andrilla et al., 2019a). Similarly, Andraka-Christou and Capone (2018) reported that stigma was one of the most commonly-reported barriers to prescribing MAT among the twenty physicians they interviewed.

Based on forty-three interviews with addiction treatment professionals, Madden (2019) found that professionals working in MAT face multiple types of stigma that operate differently

from those working in other types of addiction treatment. Not only do they experience “courtesy stigma” due to their social proximity to a stigmatized population, but they also experience “intervention stigma.” In contrast to courtesy stigma, intervention stigma is often directed specifically toward health professionals who provide a medication intervention like MAT. Madden (2019) identifies the three main drivers of the intervention stigma as: strict federal regulations, using personal addiction treatment experiences to guide professional practice, and limited MAT science. She also notes that although the academic literature is overwhelmingly in support of MAT, there remains a “persistent skepticism among abstinent treatment professionals...” (Madden, 2019).

Addressing Barriers

Six articles identified in this literature review included descriptions of provider experiences with addressing barriers to providing MAT (Andrilla et al., 2019a; Jones & McCance-Katz, 2019; Kirane et al., 2019; Loxterkamp, 2017; Madden, 2019; Moore, 2018). In addition to the themes described above, a few articles discussed providers’ motivations for prescribing buprenorphine and providing substance abuse treatment.

Training and support. Among providers at a large healthcare organization, Kirane et al. (2019) found that those who were trained to prescribe buprenorphine were more likely to feel confident treating opioid use disorder, believe opioid use disorder treatment was in their scope of practice, and prefer not to refer patients for addiction care. General institutional support was also one of the supporting factors that motivated newly DATA-waivered clinicians to start prescribing buprenorphine (Jones & McCance-Katz, 2019).

Based on forty interviews with primary care physicians who prescribe buprenorphine, Andrilla, Moore, and Patterson (2019a) described their recommendations for starting and

maintaining MAT services. These physicians recommended that new prescribers find a mentor, begin with only a few patients, and set aside a discrete amount of time to devote to MAT care. In order to maintain services, the interviewed physicians recommended using a patient contract, establishing boundaries with patients, and terminating treatment when it is not effective for a specific patient. Interviewees specifically described the effectiveness of the hub and spoke model of care, which allows for smaller clinics (i.e., the spokes) to refer to a larger clinic (i.e., the hub) when specific patients need more extensive care. Most physicians interviewed also required patients to participate in counseling, including individual counseling, group therapy, and Narcotics Anonymous (Andrilla et al., 2019a).

Financial and regulatory restrictions. According to Andrilla, et al. (2019a) there was significant variation in interviewee response relating to the financial viability of MAT services. Some physicians decided to accept cash only for services, while others reported “taking the financial hit” by accepting Medicaid payments that were too low given the time necessary to care for this patient population. Regarding DEA requirements, physicians recommended following the rules closely, keeping detailed records, and being prepared for a DEA visit. In order to prevent the diversion and misuse of buprenorphine, interviewees reported utilizing “random pill counts, urine drug screens, [and] state prescription drug monitoring programs” and “developing relationships with local pharmacies, checking local police blotters, and investigating allegations from community members” (Andrilla et al., 2019a, p. 118). Based on surveys of DATA-waivered clinicians, increased reimbursement for MAT often allowed them to start prescribing buprenorphine (Jones & McCance-Katz, 2019).

Patient demand and time. Only one article in this review addressed the barrier of patient demand and time. In their surveys of DATA-waivered clinicians, Jones and McCance-

Katz found that increased patient demand was a supporting factor for starting to prescribe buprenorphine after receiving a waiver (2019).

Stigma. Physicians reported addressing stigma by having open and honest conversations with colleagues and staff. They also described “humanizing patients through having others shadow them, meet patients, and observe the treatment process” (Andrilla et al., 2019). In an editorial from the *Journal of Addictions Nursing*, a nurse practitioner calls on nurses to educate the public about the inaccuracy of the belief that buprenorphine perpetuates the problem by substituting an illicit substance with a prescription medication (Moore, 2018). In her description of intervention stigma, Madden (2019) specifically calls for more qualitative research focused on addressing the role that a professional’s personal history of substance abuse and treatment has in intervention stigma, as many of those who do not accept the evidence for MAT have personal experiences with abstinence and 12-step programs.

Motivation for prescribing MAT. Rural physicians interviewed about prescribing MAT reported that the work was highly rewarding and fulfilling. They described personal satisfaction in seeing changes in patients’ lives and being part of the solution to addressing the opioid epidemic (Andrilla et al., 2019). Nurse practitioner Moore (2018) writes, “As a nurse, I feel a strong duty to care for patients with OUD, many of whom would not be struggling with an addiction if they had not been started on a regimen of legally obtained medications they received for an injury or surgery” (p. 229). Similarly, in an editorial in the *Annals of Family Medicine*, Loxterkamp (2017) describes why he provides MAT stating, “I am still involved because I am a doctor and this [the opioid epidemic] is the epidemic of our time, a social tsunami that can be traced to my prescription – and yours” (p. 303). He goes on to argue that addiction is a chronic

disease that can, and should, be managed appropriately in the primary care setting (Loxterkamp, 2017).

Gaps Identified

The aim of this literature review was to better understand provider and staff experiences providing MAT care. To date, there are few research studies focused on provider experiences, and those that have been conducted concentrate on identifying and addressing barriers to providing MAT. As stated by Lagisetty et al. (2017), more research is needed to evaluate healthcare provider outcomes. In addition, studying how a MAT program functions, the role each team member plays, which frameworks providers utilize, and how clinicians experience stigma in their work will be informative to building OUD treatment capacity in clinics across the United States.

Furthermore, there have been a few qualitative studies addressing physician experiences providing MAT, but little research addressing non-physician prescribers (i.e., NPs and PAs) and other members of the healthcare team has been done. Kirane et al. (2019) and Jones and McCance-Katz (2019) included NPs in their surveys; however Andraka-Christou and Capone (2018) chose not to interview NPs and PAs because “they have only been prescribing sublingual buprenorphine in the U.S. since 2016, and half of states require supervision by a SAMHSA-waivered physician when prescribing buprenorphine” (p. 10). This literature review included an editorial written by an NP; however, no research was found specific to advanced practice nurses providing MAT.

Approach to the Conduct of the Project

In September 2017, the OHSU Department of Family Medicine implemented a tier-based, interdisciplinary model for MAT at two primary care clinics. Using the Massachusetts

Collaborative Care Model (Alford et al., 2011) as a framework, OHSU hired and trained Registered Nurse (RN) care managers and panel coordinators. In addition, behavioral health clinicians (BHCs) were integrated into the primary care team to address the psychosocial needs of patients on MAT. Distinct from other primary care models, BHCs are involved in the initial evaluation of the patient's readiness for treatment at these clinics. Initially, patients have semiweekly contact with BHCs and alternating weekly visits with the RN care manager and provider. As they progress in treatment, the frequency of these visits decreases (Cantone, Fleishman, Garvey & Gideonse, 2018).

The OHSU Family Medicine Evaluation team is using the RE-AIM Framework (Glasgow, Vogt & Boles, 1999) to evaluate changes in MAT initiation, retention in treatment, OUD outcomes, and changes in utilizations of services before and after the implementation of this model (L. Gordon, personal communication, May 28, 2019). The qualitative arm of the project is focused on identifying factors that influence implementation of and experience with this intervention for clinical teams and their patients. OHSU Family Medicine researchers have completed interviews of 14 clinic staff members involved in the MAT program at their Richmond and Scappoose locations. The focus of this DNP project is the qualitative analysis of these interviews.

Goals and Objectives

The goal of this DNP project was twofold. The first goal was to support the program evaluation mission of the OHSU Family Medicine Evaluation team. The second was to use a grounded theory qualitative analytical approach to explore themes surrounding clinician and staff experiences providing MAT for OUD in the primary care setting.

Framework and Theory

RE-AIM is a framework used in program evaluation to analyze health behavior interventions and “improve the sustainable adoption and implementation of effective, generalizable, evidence-based interventions” (RE-AIM, 2019). The five steps of this framework are Reach, Effectiveness, Adoption, Implementation, and Maintenance. Data from clinical staff interviews will be used to assess the interdisciplinary model for providing MAT with respect to all five steps of the RE-AIM framework. The data analysis of the clinical staff interviews will be contextualized within the broader aims of this project and supplemented with other data sources to fully evaluate the program.

In addition to supporting the OHSU program evaluation, this researcher used grounded theory to further analyze the experiences of clinical staff providing MAT to patients with OUD at OHSU Family Medicine. Grounded theory is a widely-used qualitative research methodology in nursing and healthcare science (Oshansky, 2015). The method allows researchers to develop an explanatory model or theory about a phenomenon of interest. Grounded theory can be especially useful in areas that are under-researched, like substance abuse treatment in the primary care setting (Singh & Esteban, 2018). Since the other purpose of this part of the project is to analyze how clinicians experience the MAT program, the grounded theory approach is fitting.

Among the many distinct philosophies of grounded theory, the Charmaz (2014) approach was utilized for this project. As a Family Nurse Practitioner (FNP) trained in providing MAT and with experience as a student at one of the clinics, the researcher has a unique “insider-outsider” position. Personal and professional experience with the subject matter was shared with the evaluation team and brought to the data analysis. Unlike other approaches to grounded theory where this familiarity is categorized as bias, the Charmaz (2014) approach acknowledges this

experience, as well as existing knowledge in the literature, while interpreting the data and constructing theories (Singh & Estefan, 2018).

Setting

Like the United States as whole, the state of Oregon is experiencing an opioid epidemic. In 2013, the National Survey on Drug Use and Health demonstrated that Oregon had the highest rate of nonmedical use of prescription pain relievers, with 6.4% of residents reporting use in the past year, compared to a national rate of 4.6% (SAMHSA, 2013; Holton, White & McCarty, 2018). After this data was published, the state developed a multifaceted, public health approach to combatting the opioid epidemic. This approach included the Oregon Health Authority (OHA) Opioid Initiative with the goal of reducing deaths, non-fatal overdoses, and harms to Oregonians from opioids. Despite efforts to expand MAT and substance use disorder treatment programs, there remain challenges (OHA, 2018). Among Medicaid participants in Oregon, men, American Indians, rural Oregonians, and people with a psychiatric disorder were less likely to access psychosocial treatment or MAT (McCarty, Gu, McIlveen & Lind, 2019). Of the 1,715 providers with DATA waivers in Oregon, the vast majority of providers are located in urban counties. There remain three counties (i.e., Gilliam, Harney, Wheeler) in Oregon without a DATA-waivered provider and ten counties (i.e., Baker, Coos, Crook, Curry, Grant, Jefferson, Lake, Morrow, Tillamook, Sherman) with fewer than five DATA-waivered providers (SAMHSA, 2018b).

Clinical Sites

Providers and staff from two OHSU Family Medicine clinics were interviewed for this project. By focusing on two clinics, one an urban Federally Qualified Health Center (FQHC) and the other a Rural Health Center (RHC), within OHSU Family Medicine, the evaluation team was

able to analyze the similarities and differences that occurred in the two different contexts. These contexts were applied to qualitative themes found in provider interviews and included in the analysis.

The OHSU Richmond Clinic is an urban FQHC located in Southeast Portland in Multnomah County. This primary care clinic sees patients with Medicaid and Medicare and offers sliding fee discounts to patients with difficulties paying for care (OHSU, 2019). The 17 MAT prescribers include NPs, PAs, and MDs (both residents and attending physicians), who manage the care of approximately 350 patients on MAT (E. Abiles, personal communication, September 30, 2019). Clinic staff members supporting the MAT program include a physician medical director, an RN, two behavioral health consultants (LCSWs), and a panel coordinator (J. Fleishman, personal communication, September 18, 2019).

The OHSU Scappoose Clinic is an RHC located in Columbia County. The clinic is approximately 20 miles northwest of downtown Portland. The clinic sees patients who travel from coastal, rural surrounding counties (e.g., Clatsop and Tillamook) that have fewer primary care providers and MAT prescribers. The Scappoose clinic also serves patients with Medicaid and Medicare and offers sliding fee discounts to patients with difficulties paying for care (OHSU, 2019b). The eight MAT providers include NPs, PAs, and MDs. They prescribe buprenorphine to approximately 180 patients. The clinic staff members supporting the MAT program are one behavioral health specialist, an RN, and a panel coordinator.

Participants

Fourteen clinical practice members working with the MAT program at the OHSU Richmond and Scappoose clinics were interviewed for this project. The sample was a purposive sample, in that certain members of the care team were targeted in order to gain insight into

various aspects of the program. The targeted members chose to participate and included members of leadership, prescribers, behavioral health clinicians, an RN, and administrative staff.

Methods

Implementation Procedures

Clinical practice members were recruited for 40-minute semi-structured interviews focused on the MAT program at their clinic. Researchers requested interviews with the clinical practice members. Interviews were voluntary and participation was kept confidential. At the request of the researcher and permission of the participant, interviews were recorded. Verbal consent was given at the beginning of the recording, without requesting any identifying information (i.e., name of participant). Topics addressed in the interview included: the leadership, mission, and goals of the MAT program; the fit of the MAT program with the clinic's overall goals; how patients progress through treatment; internal team operations; monitoring patient progress and program goals; and identifying resources for complex patients. Participants were also asked about challenges they have faced, as well as specific successes of the MAT program. The interview guide is included in **Appendix B**. While interviews were being completed, researchers identified the theme of harm reduction and added this topic to the interview guide.

Recordings from the interviews are being stored using participant code numbers on the OHSU encrypted network. Interviews were professionally transcribed and all identifying information within the transcripts was removed and replaced with pseudonyms (Oregon Health & Science University Department of Family Medicine, 2018). The qualitative research software, ATLAS.ti, was used to manage and analyze interview transcripts. Prior to reviewing the interviews, the DNP student participated in a brief training on how to use the software and was

given access to an OHSU-encrypted computer in order to access the transcripts and code the data. In addition to training on the software, the DNP student started the project by analyzing three interviews that had already been completed by two OHSU expert researchers. The findings of these three interviews were compared using ATLAS.ti and discussed as a group. These discussions helped the DNP student to learn about the coding process and the specific procedures followed by this group of researchers.

Analytical Approach

The Charmaz (2014) grounded theory approach to qualitative data analysis was utilized in order to identify patterns in the data and generate theories. This approach is an iterative process of data collection and analysis that allows for researchers to creatively interpret the data. Both induction, through which a researcher moves from specific data to general theories, and deduction, through which a researcher tests abstract ideas against emerging data, are used to make sense of the data using this method (Singh & Esteban, 2018).

When using grounded theory, coding is an initial opportunity for researchers to pause and ponder the results of the data. Through ongoing coding, researchers further break down, analyze, and synthesize data into emerging concepts (Singh & Estefan, 2018). Upon first review of the interviews, the OHSU Family Medicine evaluation team identified broad themes and topics, defined and described these themes, tagged these in the text, and developed a name, or code, to represent the theme. This group of codes developed became the initial codebook. After the first three interviews were coded, the team met as a group to discuss findings and further refine and solidify the coding structure. Then, the DNP student and one OHSU researcher split the remaining 11 interviews and completed coding. This coding was completed and then reviewed by the other team member over the following weeks. Analysis of interviews was compared and

different ways of understanding and interpreting interviews were discussed until consensus was reached. One theme that emerged from this analysis, but was not anticipated, were team member views and beliefs related to harm reduction and MAT. These data were carefully analyzed, with some additional codes being developed to tag emerging findings. These new codes were reviewed multiple times by the team, to carefully explore and interpret these themes, which led to the development of inferences, or theories, related to harm reduction and MAT delivery.

After completing coding, each team member wrote an analytical memo related to the MAT functions at each clinic. In Charmaz's approach to grounded theory, memo-writing is the step between coding and paper writing (Charmaz, 2014). It allows the researcher to stay involved in the data analysis, and in this case, it allowed the team to share ideas between members. These memos are currently being further refined and will contribute to one or more manuscripts about the implementation of the MAT program at OHSU.

Timeline

This DNP project was scheduled to be completed by June 2020. This timeline was met, and the detailed timeline included in **Appendix C** was followed.

Ethical Considerations

The OHSU Family Medicine team received IRB approval for this project, and the DNP student was added to their application. There is minimal risk to provider participants. However, there was a possibility that participants would experience some discomfort during the interviews. Participants were given permission to skip questions or stop the interview if needed.

In order to address privacy and confidentiality concerns, qualitative data was stored on the OHSU encrypted network and was only be accessible to OHSU research staff, including the DNP student. Code numbers identifying interview participants were kept confidential. All

reports describe results in aggregate form only, and code numbers are not reported in any analyses. Data analysis occurred in a secure research setting on password-protected computers. After analysis is completed, audio-recordings will be destroyed (OHSU Department of Family Medicine, 2018). For more information regarding ethical concerns in this project, refer to the IRB proposal in **Appendix D**.

Findings

MAT Program Evaluation

The qualitative evaluation of the MAT program has led to two main findings. First, the MAT program has key MAT functions that were essential to the delivery of the program but were adapted to fit in the two different clinical settings. Second, the MAT program was implemented utilizing a harm reduction approach to treating opioid use disorder. At this time, the OHSU Evaluation team continues to analyze clinician interviews and additional data that was not included in this DNP project (e.g. field notes, upcoming patient interviews). The outcomes of this DNP project are based on preliminary findings from the team with some additional interpretation from the DNP student.

MAT Functions

The OHSU MAT Program Manual sets the policies and procedures for the MAT treatment team. Four of the functions included in this manual were identified as essential to the operations of the program: intake, induction, stabilization and risk tiering, and maintenance. The evaluation team further examined these functions to determine who from the team is involved and how each function is completed at the two clinics. In addition to the functions that were

included in the Program Manual, care coordination and team-based care were identified as key elements of the MAT intervention.

Intake. This function refers to the process in which a patient is referred to the MAT program and completes an intake visit. While the intake visit is similar at each clinic, how patients are referred to the program varies. Staff members at the urban clinic found that most patients learned about the program through word of mouth, while those at the rural clinic reported referrals from a local non-profit agency, a county drug court, and some self-referral.

At both clinics, patients must establish care with a primary care provider (PCP) prior to becoming part of the MAT program. In visits with new or existing patients, PCPs are able to create a referral to the MAT program and/or utilize a warm handoff to the MAT team. Clinical MAT team members at both clinics include both BHCs and RNs; however, the number and dedicated hours to the MAT program vary. After the referral is initiated, patients are asked to complete an introduction form, which screens patients for eligibility to the program. If they are eligible, the panel coordinator, or another team member, schedules an intake visit.

Intake visits are led by an RN or BHC at each clinic. The decision of who a patient meets with depends on scheduling and availability of staff members. During this visit, the patient is provided with information about the program and paperwork is reviewed, including the informed consent for buprenorphine treatment, the treatment agreement form, and a pregnancy consent form, given that buprenorphine/naloxone has not been approved for pregnancy. The MAT RN counsels the patient on risks associated with the medication, while the BHC administers a behavioral health screening to assess program fit.

Staff members at both clinics described the importance of relationship building and establishing rapport with patients during intake visits. One staff member described this

experience saying, “I’m part of introducing patients to the program, when they’re first starting and building that foundation of trust and respect with the patient so they know what to expect from us and so that we can be clear about their expectations” (Richmond, Participant 7).

Interviewees described the visits as multipurposed. They are tasked with providing the patients information about the program culture and requirements, while also learning about the patient, their goals, and their ability to participate in the program.

Induction. Induction refers to the process of initiating buprenorphine treatment. The patient’s first dose can be taken in a supervised, office-based setting or they can initiate treatment in their home. A significant difference in induction was found between the two clinics due to the availability of a pharmacy on site at the urban clinic. Since the rural clinic does not have a pharmacy, the majority of their patients are induced at home, while an interviewee from the urban clinic reported that approximately 60% of the clinic’s patients initiate treatment while in the office.

At the urban clinic, the decision to complete an in-office or home induction is made on a case by case basis, dependent on the patient and provider’s comfort with buprenorphine and other key patient factors. Patients who have been on buprenorphine in the past and understand the medication and risk of precipitated withdrawal are more likely to be comfortable with a home induction. While home inductions are not typically recommended for patients who do not have stable housing or have children at home. Multiple interviewees noted that a growing number of patients have some buprenorphine experience upon entering the MAT program.

The process of induction is similar if done in the office or at home. In the office, the MAT RN administers the Clinical Opiate Withdrawal Scale (COWS) prior to starting buprenorphine and checks on the patient regularly to prevent precipitated withdrawal. If induced

at home, the patient discusses their plan for starting the medication with their provider and the MAT RN. The patient picks up a prescription for a few tablets of buprenorphine and starts the medication at the time discussed. The patient then communicates with the clinic through telephone a couple hours after starting the medication. The MAT RN also checks in later that day and following day to ensure the patient is doing well and has the support they need. Both patients that induce in clinic and at home are scheduled for an in office visit two to five days after induction.

Risk tiering and stabilization. After a patient is induced on buprenorphine, they enter the risk tiering and stabilization phase of the MAT program. This function provides the interdisciplinary MAT team with a standardized approach for identifying patient needs and communicating about their progress throughout their treatment. Patients are initially assigned Tier 1 and progress through Tier 5, depending on how they do on treatment and what needs they have. Patients' progression through treatment varies widely. The OHSU MAT Program Manual delineates the frequency of required clinic visits and urine drug screens (UDS) and quantifies how long buprenorphine prescriptions should be written for based on the patient's tier. Patients at both clinics rotate between seeing their MAT prescriber and a BHC and/or RN. The team member they see depends on scheduling, the patient's nursing or behavioral health needs, and the patient's preference. A key difference in the clinics is that the urban clinic has two BHCs dedicated to the MAT team, while the rural clinic only has one BHC who splits their time among other clinic responsibilities and MAT. RNs at both clinics spend about half of their time with the MAT program.

At both clinics, in order for a patient to move up a tier (i.e. fewer visits required), two members of the MAT team must agree, while only one team member is required to move a

patient down a tier (i.e. more frequent visits required). Discussions about patient stability and progression through tiers is discussed both informally, through hallway conversations, and formally, through weekly meetings and messages through the electronic health record (EHR).

Clinical staff explained that patients typically move up tiers when they demonstrate improvement in one area of their lives. Examples of life improvements include: decreasing opioid use, decreasing use of other substances, finding stable housing, engaging in therapy, and improvements in legal issues, parenting, work, and school. Attending appointments and showing that they are engaged in treatment is another reason clinicians consider moving patients up a tier. One interviewee explained that negative urine analyses and reports of nonuse of substances are usually a part of increasing a patient's tier; however, another interviewee noted that this was not always the case. A BHC at the urban clinic shared that they also consider moving a patient up a tier when they no longer seem to be benefiting from frequent visits, and one of the clinic's providers added that decreasing frequency of visits can be beneficial if a patient is struggling to come in due to work or family obligations.

Patients are moved down a tier, or asked to come in more frequently and given shorter prescriptions for a few reasons. Interviewees explained that this may occur if a patient has an altered UDS or there is no buprenorphine on their UDS. This shows that the patient may have dropped a tablet of buprenorphine in their urine or otherwise may not be taking the medication appropriately. Missing appointments and sustained, intermittent use of substances that is preventing a patient from engaging fully in treatment is another reason to move someone down a tier. Only one interviewee said that relapse or problematic substance use alone was a reason to move a patient down a tier. One MAT provider noted that they do not typically move patients down tiers saying, "I don't do that 'cause I don't think that's my job. I don't think that's my job. I

think my job is to put the patient where they wanna be” (Richmond, Participant 2). Another participant summarized saying that “general dishonesty” (Scappoose, Participant 5) was a reason for decreasing a patient’s tier.

Maintenance. Interviewees described the maintenance phase as when a patient achieves a certain level of stability and is making improvements in multiple areas of their lives. This phase is not markedly different from risk tiering and stabilization; however, clinic visits are less frequent and prescriptions are written for longer periods of time. Participants noted that relapses can continue to occur while patients are in the maintenance phase and this is to be expected in substance abuse treatment. There were no significant differences found between clinics; however, the evaluation team found that interviewees did not discuss this phase at length and little data was available.

Additional functions. In addition to the four functions outlined in the OHSU MAT Program manual, the evaluation team hypothesized that care coordination and team-based care were essential to the implementation of the program. At the time of these interviews, each clinic had a full-time panel coordinator. In addition to the administrative role of tracking prescriptions and scheduling applicants to the program, this position was responsible for patient outreach. One panel coordinator explained this aspect of their role saying:

We have many patients who just, as a part of this process, they wax and wane. They relapse. They fall out of the program, come back on. Really, keeping track of patients is a big job...if someone doesn’t come back, it doesn’t mean that they don’t want to be sober; it just means that they’ve relapsed and that’s how it goes. It’s my job to bring them back in (Richmond, Participant 4).

Other interviewees described the effectiveness of the panel coordinator role at both clinics, saying that it is necessary to ensure clinical staff are able to complete their responsibilities. One clinical staff member stated, “she takes care of a lot of the administrative stuff, which I think frees up all of our schedules to be able to focus on what we need to do in terms of patient care” (Scappoose, Participant 5).

The MAT program at both clinics is coordinated by an interdisciplinary team including an RN, BHCs, and MAT prescribers. Team members are involved in many phases of care delivery and communication is essential to patient success. The involvement of BHCs in this program is unique, in that they are involved in assessing patient eligibility, determining tier level, and delivering care. Clinicians described the accessibility of the MAT team and the added benefit that patients receive by having behavioral health support. One provider commented on the benefits patients experience by having BHCs as part of the MAT program:

My expectations have been exceeded...[to] the degree to which our patients really do benefit from at least the opportunity and routine check-in with a behavioral health component because so much of this work is behavioral...whether it's maximizing the benefits of their recovery or supporting... lots of chronic instability, the benefits of having folks who do have a longer period of time and help create the open access environment with an emphasis on the lived experience of the patient is really beneficial, both to patients and their level of function. Some of my worst cases have expressed great gratitude and really achieved a different level of stability through their behavioral health consultant (Richmond, Participant 3).

This interdisciplinary collaboration also demonstrated how BHCs can inform how MAT prescribers and help PCPs, who do not always have specific training related to addiction, understand substance abuse treatment. One interviewee shared:

I think BH's role is often reassuring the provider that this instability that we're seeing, the slips and the relapses, ... maybe missing appointments, maybe running out [of buprenorphine] early, is all part of the stabilization process over time. I think we [BHCs] do a fair amount of putting the behavior in the context of MAT treatment in a, like, looking out farther than this month or this week. Reminding the MAT providers again that it's a relapsing remitting condition and that this would be expected even when on treatment (Richmond, Participant 1).

BHCs are actively involved in the provision of MAT at both clinics; however, the amount of staff hours devoted to the program varies. At the urban clinic, there are two BHCs dedicated to MAT, while the one clinic BHC at the rural clinic only has half of their time devoted to MAT. At both clinics, the majority of patients in the MAT program are seen by a BHC.

Harm Reduction

While completing interviews, OHSU researchers found that many participants brought up the theme of harm reduction when describing MAT. Questions about the definition of harm reduction and how it plays out in the clinical setting were added to the interview guide to further understand this theme, and interviewers followed up with those who had already participated. There were variations in perspectives found among participants; however, all respondents agreed that they utilized some aspect of harm reduction when delivering MAT. The OHSU evaluation team is continuing to analyze the findings of interviews related to harm reduction; however, preliminary findings are described below.

Many participants explained harm reduction was difficult to define; however, a common theme among their descriptions was that nonuse of illicit substances was not the goal of the MAT program, but rather it was decreased use and improved health, wellness, and overall functioning for patients. Others described harm reduction as limiting the danger that patients are exposed to through drug use and reducing emergency room visits and deaths caused by overdose. Some chose to contrast the principles of harm reduction with other models of care, including abstinence-only models and more punitive programs that utilize “three strike” policies when patients continue to use substances. They explained that relapses are an expected part of recovery and emphasized that patients need additional support and understanding during these periods rather than punishment. One participant described the importance of this approach by saying:

We know that people have the highest likelihood of overdosing and dying when they relapse, and so whatever I can do to try to support someone in using less, or using safely, or maybe curbing it to the point that they’re not gonna use that day, or have a few days clean. Whatever I can do is probably gonna up their chances that they’re gonna live to the point where they have stopped using drugs (Scappoose, Participant 5).

When asked about harm reduction, many participants also described the strategy of “meeting people where they are at,” or approaching patients from a non-judgmental perspective and focusing on the patient’s goals rather than solely stopping opioid use.

Participants at both clinics noted that there were variations on the use of harm reduction principles and comfort when prescribing buprenorphine among clinicians. One interviewee stated, “We all have a harm reduction approach, but I think we all have different levels of tolerance of what we’ll allow and not allow” (Scappoose, Participant 2). Interviewees explained that while some providers will continue to prescribe if a patient is using illicit substances, such as

methamphetamines, others noted that they expect patients to abstain from all substances other than marijuana. Prescribers also described variation among colleagues in terms of dosage of medication prescribed. While some providers were comfortable prescribing daily dosages up to 24 mg, other prescribers focus on weaning a patient's dosage more quickly during treatment.

Some participants hypothesized that comfort with harm reduction and patient instability comes with experience. For example, one provider stated, "I think the newer prescribers are much more careful about amount [the dose of buprenorphine] and feeling like they need to obsess about the amount, whereas the more experienced providers are more looking at engagement" (Scappoose Participant 1). However, another experienced clinician noted:

Maybe my boundary around this [harm reduction] is a little different than some of the other people in the clinic. That when someone is harming themselves so much and I don't seem to be helping them, that my boundary for stopping my participation in that process is closer than some other people in the clinic (Richmond, Participant 8).

Clinicians each had their own approach to the delivery of MAT based their own attitudes and beliefs about harm reduction; however, there was a common understanding that this perspective was important to the delivery of care. The variation in attitudes was seen across clinics, rather than one clinic having a different perspective than the other. While there were no significant differences seen between the two clinics, there were some differences between types of clinicians. All RNs and BHCs interviewed supported a broad definition of harm reduction and reported a high level of tolerance for substance use; however, there was more variation seen among prescribers. Several prescribers described the possible disadvantages of using this approach, including the risk that patients will divert or abuse buprenorphine and a possible strain on resources available.

Clinician Experiences

While the goal of interviews was not to focus on clinician experiences providing MAT care, many interviewees described their personal experiences and stories when answering questions about the implementation of the program. The DNP student analyzed these descriptions and developed two main categories of findings: clinician motivation for providing MAT and experiences with team-based care.

Motivation for providing MAT

Many of the interviewees described their work with MAT as rewarding and felt drawn to providing substance abuse treatment based on professional and personal experiences. One provider described MAT as:

Some of the most rewarding care that I do. You know, we do a whole lot in family medicine, and very often, in primary care, very oftentimes we don't get a lot of gratitude for that...but people tell me I've saved their lives through their MAT program, and they're back to just being part of a person again... it's a big motivator for me, at least, to keep doing some of this (Scappoose, Participant 6).

Many of the interviewees noted their interest in working with at-risk urban populations or in a rural setting, which aligned with the two clinics' patient populations. An interviewee from the rural clinic said, "I've always wanted to work in a rural place. What a gift to get to work in a rural place and have these incredibly progressive ideas of how to treat addiction" (Scappoose, Participant 5). Others noted that they were drawn to their job because of an interest in learning more about MAT. For example, one clinician stated, "One of my passions is to promote the treatment of people with substance-use disorder" (Richmond, Participant 2).

Interviewees had previous experience working at nonprofit agencies, hospitals, and clinics focused on providing substance abuse treatment or care for other at-risk populations. Some clinicians started providing MAT in their residencies or other training programs, while others obtained their DEA waiver after acknowledging the health system's role in the opioid epidemic. One experienced MAT prescriber explained, "It had become clear in the mid-2000's that what we were doing with opioids was becoming more and more problematic and that something different should be done about it" (Richmond, Participant 8). Two participants also described an interest in substance abuse treatment based on personal experiences with addiction in themselves or their friends.

One NP was included in the interviews. They described being interested in substance abuse treatment but having to wait to prescribe buprenorphine until CARA passed in 2016. This NP described a need for encouraging other providers to prescribe buprenorphine and incorporating MAT into medical, PA, and NP training programs. They also highlighted how federal and state policies affect the provision of MAT saying:

I want to go testify in congress and say, "Why is it on a federal level nurse practitioners can prescribe MAT, but why do we have to do 24 hours [of training] instead of the 8 [that physicians do]? Why in Tennessee is no one who's a nurse practitioner allowed to prescribe Bupe, for some unknown reason? (Richmond, Participant 2).

Experiences with team-based care

Most interviewees at both clinics described the team-based approach to care as beneficial to both patients' experiences and their own job satisfaction and wellbeing. While describing challenges in providing MAT, one prescriber said, "The hardest part of this is that these visits, although technically are easy, are emotionally incredibly challenging and that's where the team-

based model is incredibly successful” (Scappoose, Participant 2). This provider further explained that prior to the implementation of the team-based model at their clinic, they often felt emotionally drained and overwhelmed by the amount of time and energy required to care for this patient population. The additional support from behavioral health, nursing, and other waived-prescribers has made the workload much more manageable for them.

Providers described the high patient load they experience in primary care and how having BHCs who can spend more time with patients and provide emotional and psychosocial support has made their job better. Several interviewees discussed how medical providers do not receive enough training on providing emotional and suggested that BHCs are better equipped for this care. One non-BHC team member described how they experienced secondary trauma and burnout after providing significant direct counseling to patients in the MAT program. The team-based model allowed them to modify their role within the team, so that trained BHCs would provide more of the day to day counseling, decreasing their feelings of burnout.

Interviewees described how the team-based model may also encourage more providers to obtain their DEA waiver and prescribe buprenorphine. Without the behavioral health and administrative support, providers in smaller clinics hesitate to provide this care because of not having the staffing or emotional capacity to support patients with OUD. One clinician stated:

The whole idea of team-based care means that more and more providers will continue to think about prescribing and treating their patients because they don't have to carry that emotional burden of skills that none of us were trained in medical training to provide (Scappoose, Participant 2).

Even though the majority of clinicians described the integration of behavioral health and nursing into MAT as beneficial, there were a few descriptions of communication breakdowns

and scheduling difficulties. One provider struggled with balancing continuity of care with the team-based model, saying that patients do not consistently see their own prescriber and that it is irritating to see another provider's patient for MAT. They went on to say, "The team-based care is, it's a little bit hard to know who's responsible in ways... it's turned from more relationship-based care between me and a patient who is struggling to some team entity that it wasn't really clear who it was" (Richmond, Participant 8).

Discussion

The OHSU MAT program was implemented in two clinical settings within one healthcare system. Common essential functions were found among the two clinic settings including: intake, induction, risk tiering and stabilization, maintenance, care coordination, and team-based, interdisciplinary care. Overall, the clinics implemented the same intervention; however, there were small differences in implementation due to differing resources and patient populations. For example, the rural clinic reported more in-home inductions than the urban clinic due to the availability of an on-site pharmacy at the urban clinic.

Interviewees at both clinics described the importance of utilizing principles of harm reduction while providing MAT in the primary care setting. Even though harm reduction was a part of all interviewee's approach to MAT, there were variations in their attitudes and beliefs which likely leads to differences how care is delivered. Among prescribers, comfort with harm reduction principles and prescribing practices exist on a spectrum, varying from a more conservative approach to a more progressive one. Examples of practices that lean toward the conservative end of the spectrum include choosing to not refill prescriptions early or to stop prescribing if a patient continues to use illicit substances. The progressive end of the spectrum

includes continuing to prescribe buprenorphine unless there are concerns about dishonesty or the patient's safety.

The difference between the comfort level of RNs and BHCs compared to prescribers may be associated with the professional responsibility and liability a provider has related to the adverse effects of the medication, DEA licensure, and a medical or NP license. Although, it is also possible that nursing and behavioral health education, training, and culture may prepare these staff members to be more open to the harm reduction approach. The NP who was interviewed reported utilizing a more progressive harm reduction approach than some of the medical providers. Their nursing background may have played a role in their perspective; however, more research is necessary to further understand the factors that explain these differences. Clinics should consider further assessment of clinicians' comfort level with prescribing buprenorphine and provide opportunities to discuss the safety of the medication and best practices for prescribing.

The OHSU MAT program addresses many of the barriers to providing MAT in the primary care setting that was identified in the literature. Through the team-based, interdisciplinary model, prescribers are given additional support from more experienced clinicians and experts in behavioral health and nursing, which is helpful to those PCPs without training in addiction medicine. The panel coordinator provides additional administrative support and patient outreach, addressing concerns PCPs have regarding patient demand and time. The vast majority of interviewees agreed that the team-based model improved patient care and was helpful to their own wellbeing. Some of the interviewees thought that this team approach made it easier for providers and encouraged more people to obtain their DEA waiver, highlighting the attractiveness of this approach to delivering MAT in the primary care setting.

Similar to the motivations for prescribing MAT found in the literature, clinicians in these interviews discussed the highly rewarding nature of the work. Some interviewees spoke of their own experiences with substance abuse and others focused on their responsibility to treating patients touched by the opioid epidemic. Others focused more on the clinical setting and their interest in caring for at risk populations. Clinicians described stigma faced by patients but did not focus on the “intervention stigma” described by Madden (2019); however, stigma was not addressed specifically in the interview guide. There continues to be a shortage of MAT providers in Oregon and across the country, especially in rural settings. Further research should be done to gain a better understanding as to why some PCPs are motivated to prescribe buprenorphine while others are not in order to help plan further interventions.

Limitations

The findings of this evaluation will be further strengthened by additional qualitative and quantitative analysis; however, there are some limitations to the current findings. To date, only fourteen staff members have been interviewed. The limited sample size was mitigated by purposive sampling, in which a variety of roles were represented; however, no PAs or medical residents were interviewed and only one NP was included. Several of the interviewees are leaders in the MAT program and are no longer providing full time patient care. These interviewees were essential to understanding the full history surrounding the implementation of the MAT program but these clinical team members may not be as keenly aware of the day to day operations of the program as other staff members. In addition, this evaluation focuses on an intervention in a single system and two clinics in the same region of the U.S., which could limit transferability of findings. This type of evaluation needs to be repeated in a more varied and larger sample to confirm and reassess findings.

Because the goal of the project was to evaluate the program, there was less information in interviews related to the DNP student's goal of identifying providers' motivations for prescribing MAT and learning more about their experiences with stigma. Preliminary results were identified but further evaluation will be required for the refinement of findings.

Conclusion

The OHSU MAT program is an innovative, team-based model of providing treatment for opioid use disorder in the primary care setting which has been implemented in two different clinical settings – one urban and one rural. While many models of care have been implemented in order to deliver MAT, few of these models have been rigorously studied, and many are not described in the published literature (Korthius et al., 2017). Preliminary findings based on the qualitative analysis of fourteen clinical staff interviews suggest that there are key functions of the OHSU MAT program that were implemented differently according to each clinic's resources and needs. In addition, clinicians and staff members highlighted the importance of utilizing harm reduction when delivering MAT, suggesting that these principles could be applied in similar models. These findings are being further refined by researchers at OHSU, and they will be added to results of the quantitative arms of the evaluation to further understand the effectiveness of the intervention and contribute to the current understanding of MAT in the primary care setting. Next steps for the OHSU evaluation team include completing analysis of provider interviews, writing multiple manuscripts and conducting interviews with patients to further understand the implementation of the MAT program.

In their interviews, clinicians described their motivation for providing MAT and discussed their experiences working in an interdisciplinary team. The vast majority of clinicians found the MAT team to be helpful for patient care and provider wellbeing, suggesting that the

team-based model is effective at preventing provider burnout and encouraging others to obtain their DEA waiver and provide MAT. Further research is needed to gain a fuller understanding of the provider experiences and the role of harm reduction in these clinics, which could be done through additional interviews or staff surveys.

Future DNP students should focus on the role of nurses and nurse practitioners in these clinics, as well as challenges faced by NPs due to federal and state policies. There have been enormous changes in the delivery of MAT since the start of the COVID-19 pandemic. A future DNP student could learn about what changes occurred in these two clinics by interviewing staff members and comparing their findings to the current evaluation.

References

- Alford, D. P., LaBelle, C. T., Kretsch, N., Bergeron, A., Winter, M., Botticelli, M., & Samet, J. H. Collaborative care of opioid-addicted patients in primary care using buprenorphine: five-year experience. *Archives of Internal Medicine*, 171(5), 425-431. doi: 10.1001/archinternmed.2010.541.
- Andraka-Christou, B., & Capone, M. J. (2018). A qualitative study comparing physician-reported barriers to treating addiction using buprenorphine and extended-release naltrexone in U.S. office-based practices. *International Journal of Drug Policy*, 54, 9-17. doi:10.1016/j.drugpo.2017.11.021
- Andrilla, C. H. A., Moore, T. E., & Patterson, D. G. (2019a). Overcoming Barriers to Prescribing Buprenorphine for the Treatment of Opioid Use Disorder: Recommendations from Rural Physicians. *Journal of Rural Health*, 35(1), 113-121. doi:10.1111/jrh.12328
- Andrilla, H.A., Moore, T. E., Patterson, D. G., & Larson, E. H. (2019b). Geographic distribution of providers with a DEA waiver to prescribe buprenorphine for the treatment of opioid use disorder: A 5-year update^[L¹SEP]. *The Journal of Rural Health*, 35, 108–11. doi: 10.1111/jrh.12307
- Blanco, C. & Volkow, N. (2019). Management of opioid use disorder in the USA: present status and future directions. *Lancet*, 393, 1760-72. doi: 10.1016/ S0140-6736(18)33078-2
- Cantone, R. E., Fleishman, J. Garvey, B. & Gideonse, N. (2018). Interdisciplinary management of opioid use disorder in primary care. *Annals of Family Medicine*, 16(8),83. doi: 10.1370/afm.2184
- Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage.

- Fornilli, K. S. & Fogger, S. A. (2017). Nurse practitioner prescriptive authority for buprenorphine From DATA 2000 to CARA 2016. *Journal of Addictions Nursing*, 28(1), 43-48. doi: 10.1097/JAN.0000000000000160
- Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *American Journal of Public Health*, 89(9), 1322-1327. doi: 10.2105/ajph.89.9.1322
- Holton, D., White, E., & McCarty, D. (2018). Public health policy strategies to address the opioid epidemic. *Clinical Pharmacology & Therapeutics*, 103(6),959-962. doi:10.1002/cpt.992.
- Jones, C. M., Campopiano, M., Baldwin, G., & McCance-Katz, E. (2015). National and state treatment need and capacity for opioid agonist medication-assisted treatment. *American Journal of Public Health*, 105(8), e55-e63. doi:10.2105/AJPH.2015.302664.
- Jones, C. M., & McCance-Katz, E. F. (2019). Characteristics and prescribing practices of clinicians recently waived to prescribe buprenorphine for the treatment of opioid use disorder. *Addiction*, 114(3), 471-482. doi:10.1111/add.14436
- Kirane, H., Drits, E., Ahn, S., Kapoor, S., Morgenstern, J., Conigliaro, J., & Enden, J. (2019). Addressing the opioid crisis: An assessment of clinicians' training experience, practices, and attitudes within a large healthcare organization. *Journal of Opioid Management*, 15(3), 193-204. doi:10.5055/jom.2019.0503
- Korthuis, P.T., McCarty, D., Weimer, M., Bougatsos, C., Blazina, I., Zakher, B., ...Chou, R. (2017). Primary care-based models for the treatment of opioid use disorder: A scoping review. *Annals of Internal Medicine*, 166(4), 268–278. doi:10.7326/M16-2149.

- Lagisetty, P., Bush, K. K., Heisler, M., Chopra, V., & Bohnert, A. (2017). Primary care models for treating opioid use disorders: What actually works? A systematic review. *PLoS One*, *12*(10), e0186315. doi: 10.1371/journal.pone.0186315
- Loxterkamp, D. (2017). Medication-Assisted Treatment Should Be Part of Every Family Physician's Practice: Yes. *Annals of Family Medicine*, *15*(4), 309-310. doi:10.1370/afm.2103
- Mack, K. A., Jones, C. M. & Ballesteros, M. F. (2017). Illicit drug use, illicit drug use disorders, and drug overdose deaths in metropolitan and nonmetropolitan areas – United States. *Morbidity and Mortality Weekly Report Surveillance Summary*, *66*(99), 1-12. doi: 10.15585/mmwr.ss6619a1.
- Madden, E. F. (2019). Intervention stigma: How medication-assisted treatment marginalizes patients and providers. *Social Science and Medicine*, *232*, 324-331. doi:10.1016/j.socscimed.2019.05.027
- McCarty, D., Gu, Y., McIlvee, J. W., & Lind, B. K. (2019). Medication expansion and treatment for opioid use disorders in Oregon: an interrupted time-series analysis. *Addiction Science & Clinical Practice*, *14*(13). doi: 10.1186/s13722-019-0160-6
- Moore, D. J. (2018). A Nurse Practitioner's Perspective on Prescribing Suboxone for Opioid Use Disorder. *Journal of Addictions Nursing*, *29*(3), 226-229. doi:10.1097/jan.0000000000000242
- Nursing Council of State Boards of Nursing. (2018). Legislation Addressing Opioid Epidemic Becomes Law. Retrieved from <https://www.ncsbn.org/13104.htm>

Oregon Health and Science University. (2019a). Family Medicine at Richmond. Retrieved from

<https://www.ohsu.edu/family-medicine/family-medicine-richmond>

Oregon Health and Science University. (2019b). Family Medicine at Scappoose. Retrieved from

<https://www.ohsu.edu/family-medicine/family-medicine-scappoose>

Oregon Health and Science University Department of Family Medicine. (2018). MAT

Evaluation Project IRB Proposal.

Oshansky, E. F. (2015). Overview of grounded theory. In M. de Chesnay (Ed.), *Nursing*

Research Using Grounded Theory (1-8). New York: Springer Publishing Company.

RE-AIM. (2019). Frequently Asked Questions. Retrieved from [http://www.re-](http://www.re-aim.org/about/frequently-asked-questions/)

[aim.org/about/frequently-asked-questions/](http://www.re-aim.org/about/frequently-asked-questions/)

Scholl, L., Seth, P., Kariisa, M., Wilson, N. & Baldwin, G. (2019) Drug and Opioid-Involved

Overdose Deaths — United States, 2013–2017. *MMWR Morbidity & Mortality Weekly*

Report, 67, 1419–1427. doi: [10.15585/mmwr.mm675152e1](https://doi.org/10.15585/mmwr.mm675152e1)

Singh, S. & Estefan, A. (2018). Selecting a grounded theory approach for nursing research.

Global Qualitative Nursing Research, 5, 1-9. doi: 10.1177/233339361879957

Substance Abuse and Mental Health Services Administration. (2013). *The NSDUH Report: State*

Estimates of Nonmedical Use of Prescription Pain Relievers. Rockville, MD: Center for

Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services

Administration. Retrieved from

<https://www.samhsa.gov/data/sites/default/files/NSDUH115/NSDUH115/sr115->

[nonmedical-use-pain-relievers.htm](https://www.samhsa.gov/data/sites/default/files/NSDUH115/NSDUH115/sr115-nonmedical-use-pain-relievers.htm)

Substance Abuse and Mental Health Services Administration. (2018). *Key substance use and*

mental health indicators in the United States: Results from the 2017 National Survey on

Drug Use and Health (HHS Publication No. SMA 18-5068, NSDUH Series H-53).

Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from

<https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHFFR2017/NSDUHFFR2017.htm>

Substance Abuse and Mental Health Services Administration. (2019a). Medication and

Counseling Treatment. Retrieved from <https://www.samhsa.gov/medication-assisted-treatment/treatment>

Substance Abuse and Mental Health Services Administration. (2019b). National Waiver Totals.

Retrieved from https://www.samhsa.gov/medication-assisted-treatment/practitioner-program-data/certified-practitioners?field_bup_us_state_code_value=OR

Thomas, C. P., Doyle, E., Kreiner, P. W., Jones, C. M. Dubenitz, J., Horan, A. & Stein, B. D.

(2017). Prescribing patterns of buprenorphine waived physicians. *Drug and Alcohol Dependence*, 181, 213-218. doi: 10.1016/j.drugaldep.2017.10.002

Timko, C. Schultz, N. R., Cucciare, M. A., Vittorio, L. & Garrison-Diehn, C. (2016) Retention in

medication-assisted treatment for opiate dependence: A systematic review. *Journal of Addictive Diseases*, 35(1), 22-35. doi: 10.1080/10550887.2016.1100960

U.S. Department of Health and Human Services. (2019). What is the U.S. Opioid Epidemic?

Retrieved from <https://www.hhs.gov/opioids/about-the-epidemic/index.html>

U.S. Department of Health and Human Services. (2017). Secretary Price Announces HHS

Strategy for Fighting Opioid Crisis. Retrieved from

<https://www.hhs.gov/about/leadership/secretary/speeches/2017-speeches/secretary-price-announces-hhs-strategy-for-fighting-opioid-crisis/index.html>

Appendix A: Search Strategy

Date Search Completed	Database	Search Terms	Results	Included in Review
9/18/19	PubMed/ National Library of Medicine	((((("Buprenorphine"[Mesh]) OR "Primary Health Care"[Mesh])) AND (("Opiate Substitution Treatment"[Mesh] OR Medication Assisted Treatment)))) AND (((("Attitude"[Mesh] OR "Health Knowledge, Attitudes, Practice"[Mesh] OR "Attitude of Health Personnel"[Mesh])) AND "Health Personnel"[Mesh])	31	2
9/18/19	Scopus	((TITLE-ABS-KEY ("Medication Assisted Treatment" OR mat OR moud)) AND (TITLE-ABS-KEY ("opioid use disorder"))) AND (provider OR nurse OR doctor OR physician OR "nurse practitioner")	185	5

Appendix B: OHSU Interview Guide

MAT Evaluation – Clinic staff semi-structured interview guide

General staff questions

Leadership and mission of the MAT program

1. Could you tell me about your interaction with the MAT program here?
2. How did the MAT program get started here?
3. What is your sense of how the MAT program fits into the overall clinic goals?
4. What do you know about the changes to the MAT program in Fall 2016?
 - Why do you think the MAT program added a nurse and behavioral health staff?
 - Which clinical staff do you associate with the MAT program?
 - a. Who can you ask if you need information about the MAT program or a MAT patient?
 - Who do you consider the leader of the MAT program?

How well does the MAT program fit into the rest of the clinics' work?

Example questions:

- a. What clinic departments are affected by MAT patients or MAT program activities?
- b. How have the changes to the MAT program – the adding of nursing and behavioral health staff – been communicated to the rest of the clinic?
- c. Have you noticed any change in your interaction with MAT patients since the change? How so?
- d. What do you know about the MAT team workflows? How are you involved in these workflows?

How do MAT visits affect the clinic?

- a. How do you prepare for a MAT patient visit?
- b. What information do you look for in the chart?
- c. Who do you talk to about the patient?
- d. How do you determine if a patient is doing better in the MAT program?
- e. What type of training do you have for interacting with the MAT patients?
- f. What type of training do you wish that you had?
- g. What the most important skill that you use working with MAT patients?

MAT team member questions

Internal team function

Could you think of a recent patient you saw? Please describe the workflow for this patient step by step...

MAT

- i. How did they get to you?
- ii. How often will they see you?
- iii. Who else will see this patient?
- a. When do the workflows get off track?
 - i. *Probe about working with pharmacists and lab technicians.*
- b. Could you describe a situation in which the workflow did not seem to work well?

Population management and monitoring

- a. How does the clinic identify and manage MAT patients?
- b. What are the main components of population management that you track for this program?
- c. How did you decide to track these?
- d. How do you gather the data?
- e. Who in the clinic needs to know about the tracking?
 - i. Do you produce reports? For whom?
- f. What kinds of information do you get asked about the most?
- g. Could you tell me how you go about scheduling MAT patients with the MAT team?
 - i. How did you decide on this pattern?
- b. How do group visits work?
- c. What challenges do you face with scheduling?

Identify Resources for Complex Patients (Identify community resources (i.e. mental health) and have referral processes to connect patients.)

- a. Please think of an especially complex MAT patient. Tell me what made it complex and what steps did you take to resolve the issues?
 - i. How does a case like this make you feel?
 - ii. How do you handle the emotional aspects of this job?
 - iii. At this point, do you feel that you have good support on the job for the emotional aspects of working with MAT patients?
- b. What community resources do you commonly use with MAT patients?
 - i. How do you connect the patient with this community resource?
 - ii. Is there a feedback loop? How do you know if the patient utilized the community resource?
 - iii. How does the referral process happen?
- c. What community resources do you wish you had for MAT patients?

Measure Progress (A. implementation progress and goals and B. patient outcomes)

- a. When do you feel like you are doing a good job?
- b. What is frustrating you at work currently?
- c. What do you think are the top goals for this MAT program?
- d. How do you the team is going to achieve these goals?
- e. What do you need to achieve these goals?
- f. What do you think the MAT program is lacking?
- g. How sustainable is the MAT program in its current form?
- h. What are some of the barriers that prevent patients from staying in the program over 12 months?

- i. What are the barriers to getting new patients into the MAT program quickly?
- j. Which patients do you think benefit most from having access to a nurse and behavioral health consultant?
 - i. Please describe a patient who you think really needs behavioral health counselling?
 - a. As MAT program staff, how do you feel the clinic as a whole supports your work?

Authors: NithyaPriya Ramalingam, Ph.D. & Pamela Bonsu, MPH

Appendix D: OHSU IRB Proposal

1) Protocol Title

Evaluation of Oregon's Medication Assisted Treatment—Prescription Drug and Opioid Addiction Grant.

2) Objectives

OHSU Family Medicine developed an intensive and integrated behavioral health treatment model (MATCH) to expand access to underserved areas of rural Oregon with disproportionately high rates of opioid use disorder. As part of this effort, the programs at OHSU Family Medicine will provide office-based opioid treatment services at our Scappoose clinic to patients from surrounding counties without MAT programs. This IRB application includes the details of two parallel MATCH program evaluation efforts with overlapping and complementary data collection methods.

- I. **SAMSHA requirements:** The clinic at Scappoose is participating in a multi-site study, 'The Oregon State Medication Assisted Treatment-Prescription Drug and Opioid Addiction Project (OR-MAT-PDOA)', as part of a Substance Abuse and Mental Health Services Administration (**SAMSHA**) grant. An external research group, RMC Research Corporation, is completing an evaluation of several efforts within the OR-MAT-PDOA project (see external Solutions IRB approval). Scappoose will be gathering data to assist this evaluation.
- II. **Pilot evaluation:** The OHSU Family Medicine department is **piloting** an evaluation with the Scappoose and Richmond clinics with similar outcomes. There is no external funding for this group.
 - Primary Endpoint: Retention in an interdisciplinary substance abuse treatment model in a primary care clinic.
 - Secondary Endpoint: Reduction of clinical support while on MAT, tapering of substance abuse and medication over time.
 - Tertiary Endpoint: Treatment trajectory

The team **hypothesizes** that patients who receive services from the MATCH program along with physician care will have better 1) retention in the program, 2) compliance with urine screening, and 3) utilization of services, compared to when patients receive care in primarily physician led models.

3) Background

The U.S. opioid epidemic has continued with 60.9% of drug overdoses involving opiates and a tripling rate of overdose deaths from 1999-2004 (1). More drug poisoning deaths involved prescription opioids than any other type of drug, including methamphetamines, heroin, cocaine, and alcohol. Medication assisted therapy (MAT) is one approach to 1) prevent patients from achieving a high from illicit opioids and 2) manage chronic pain

while patient while patients quit illicit opioids. There are strict prescribing rules for these medications. Only waived providers can prescribe MAT drugs. New evidence found that a Medication Assisted Treatment (MAT) model in primary care is superior to abstinence only (2). Addiction treatment remains an unmet need, as less than 3% of physicians have training and practice the MAT model.

The problem in Oregon is especially acute. In 2013, almost 1 in 4 Oregonians received a prescription for opioid medications, with Oregon ranking 2nd among all states in non-medical use of pain relievers (i.e. prescription pain medication) [3]. The elevated rate of opioid use has coincided with the state of Oregon having a much higher opioid overdose mortality compared to the national level, with opioid overdose deaths being particularly elevated in rural counties with poor access to care. In our service area, for example, Clatsop County reported annual opioid overdose deaths of 13.9 per 100,000, compared to a statewide rate of 7.48 per 100,000 [4]

Many models of care are currently being tested across the country and models that include nurses, social workers, behavioral health staff, and administrative staff have shown better success at keeping patients from relapsing, no-showing, and weaning off opioids than solely physician care [5]. Several of the models have used psychological and behavioral health services that are external to the clinic where patients receive their prescriptions and care from their primary care provider (PCP). This means that it is unknown how behavior and psychological support effects these patients, what frequency of contact is needed, and if patients experience barriers to receiving mental health support.

The OHSU Family Medicine MATCH model is innovative because it includes behavioral health consultants, nurses, and psychologists with specific addiction counselling training. The whole team is on site and able to collaborate with the physician prescribing medications. We believe that this model will effect patient retention in the program, produce more compliant urine screens, and allow for better access to services and more frequent contact than a physician only model. This model needs to be evaluated and described before it can be spread to other clinics.

1. Rudd, R. A. (2016). Increases in Drug and Opioid-Involved Overdose Deaths — United States, 2010–2015. *MMWR. Morbidity and Mortality Weekly Report*, 65. <https://doi.org/10.15585/mmwr.mm655051e1>
2. Srivastava, A., Kahan, M., & Nader, M. (2017). Primary care management of opioid use disorders. *Canadian Family Physician*, 63(3), 200–205.
3. Oregon Health Authority (2014). Prescription Drug Overdose State Plan. <https://public.health.oregon.gov/PreventionWellness/SubstanceUse/Opioids/Documents/prescription-drug-overdose-state-plan.pdf>
4. Columbia Pacific Coordinated Care Organization (2016). Opioid Overdose Death Data. [internal].
5. Korthuis PT, McCarty D, Weimer M, Bougatsos C, Blazina I, Zakher B, et al. Primary Care–Based Models for the Treatment of Opioid Use Disorder: A Scoping Review. *Ann Intern Med*. 2017;166:268-278. doi: 10.7326/M16-2149

4) Study Design

The study design includes complementary data collection for 1) the SAMHSA grant requirements and 2) the pilot.

SAMHSA grant requirements:

Repeated measures design

Pilot evaluation study:

Mixed methods. Cohort design and observational design including quantitative analysis of electronic health record (EHR) data, qualitative observations, semi-structured interviews of patients, clinical practice members, chart reviews, and MAT team collaborators.

5) Study Population**a) Number of Subjects**

SAMSHA requirements

- Patients enrolled into the MATCH program at Scappoose over 29 months for Government Performance and Results Act (GPRA) (predicted n=200).

Pilot Evaluation

- Practice-level data
 - Practices implementing MATCH program (n=2). We will conduct practice observations over the course of 6 months.. We will not be collecting individual-level data during these practice observations.
- Practice member-level data
 - Clinical practice members working on the MATCH program (n=10-20).
- Patient-level data
 - We will conduct qualitative interviews with 20-30 patients who are current or former patients in the MATCH programs at OHSU Family Medicine clinics. The EHR data pull will include all patients with a documented diagnosis of opioid use disorder on their problem or encounter list during the study period (predicted n=2000). Chart reviews will be conducted on approximately 200 patients identified as being part of the MATCH program.
- MAT team collaborators
 - One MAT team member will interview 10-15 other current or former team collaborators to gather data about their experiences as a member of the interdisciplinary MAT evaluation team, with a special focus on collaborative experiences and organizational aspects of the study.

b) Inclusion and Exclusion CriteriaInclusion Criteria:

SAMSHA requirements:

- Adult (18 years old or older) patients diagnosed with opioid use disorder.
- Patients who have completed a MATCH program intake visit

- Patients who are defined as ‘stable engagement’ on buprenorphine for 1 week

Pilot evaluation:

- Practice-level data
 - Richmond Clinic 3930 SE Division St Portland, OR
 - Scappoose Clinic 51377 Old Portland Road Portland, OR
- Practice member-level data
 - Any clinicians and/or clinic staff in the study clinics who agree to be interviewed will participate in this study.
 - English-speaking
- Patient-level data
 - Adult (18 years old or older) patients with at least one visit to at least one of the study clinics during the study period with a diagnosis of opioid use disorder
 - English speaking for patient interviews
- MAT team collaborators
 - Any current or former member of the MAT interdisciplinary team

c) Vulnerable Populations

No vulnerable populations are specifically targeted/recruited for inclusion in the qualitative interviews as defined by the OHSU IRB. Vulnerable populations may be included as interviewees or in the EHR data if they meet study inclusion criteria.

d) Setting

OHSU Family Medicine Department primary care clinics

*The GPRA survey will be administered only at OHSU Scappoose and confidential public places such as coffee shops within the community.

e) Recruitment Methods

SAMSHA requirements:

Potential participants will be recruited for the GPRA survey during the MATCH intake process at Scappoose. Clinic staff will explain the study and invite potential participants into the study. Those who do not wish to consent will not be included in the sample. RMC Research Corporation (external research group) will remain unaware of those patients who do not consent.

Pilot evaluation:

Practice level

- Full explanation of the study and the purpose of the practice observations will be given to practice leaders by the research team.

Practice member-level

- Full explanation of the study and the purpose of the semi-structured interviews with clinical practice members will be given to practice members by the research team.

Patient level – Semi structured interviews

- We will use previously approved EHR data to identify a subgroup of patients who will be invited to participate in an interview. Potential participants will be contacted by a MATCH clinical team member by phone using the telephone script. If they agree to be contacted by the research team, the MATCH clinical team members will provide names and contact information of patients to the research team. The research team will contact them to explain the study, review the consent information sheet, and provide details of the interview. Patients will be informed that the interviews are entirely voluntary.

Patient level –EHR data and chart review

- This is a secondary data analysis; thus, no participants will be recruited or consented.

MAT team collaborators – semi structured interviews

- Interviewer will invite other current or former MAT team collaborators via email to participate in an interview. Interviewer will go over the Consent Information Sheet. Each potential participant will be informed that the interviews are entirely voluntary.

f) Consent Process

SAMSHA requirements:

When patients are referred to the MATCH program by their physician they will be given or sent an OHSU consent form specific to the GPRA survey administered at Scappoose.

The consent packet will have the consent form from the Solutions IRB as well as the OHSU consent form. These documents describe the purpose of the evaluation, risks, benefits, and contact information for the principal investigator at RMC Research Corporation and Solutions IRB.

During the MATCH program intake process at the clinic, research staff will call potential patient participants into a private room. The research staff and the potential participant will review the consent form again and if the patient is willing to participate, consent will be obtained. If the patient does not wish to participate, they can return to the waiting room. Once consent is obtained, participants will receive a copy of the consent and can withdraw at any time. The informed consent documents explain that participation in the study is completely voluntary and that participants do not need to answer every question. Participants are free to end the interview at any time.

Pilot evaluation:

Practice-level

- We will ask practice leads who are part of this pilot study to explain the study to practice members. The research team will also be available to explain the study.

Practice member-level

- For interviews, our study team will explain the study, review the information sheet and answer any questions before conducting an interview. We use an information sheet as the interviews present no more than minimal risk, do not involve procedures for which consent is required outside a research context, and most importantly to avoid having any documentation with interviewees' names since this would be the only document with this information.

Patient level – Semi structured interviews

- For interviews, our study team will explain the study, review the information sheet and answer any questions before conducting an interview. We use an information sheet as the interviews present no more than minimal risk and do not involve procedures for which consent is required outside a research context.

Patient level –EHR data and chart review

- This will be secondary data analysis; thus, no participants will be recruited or consented. It is not feasible to consent all of the participants whose data we will use.

MAT team collaborators – Semi structured interviews

- The interviewer will explain the study, review the consent information sheet and answer any questions before conducting an interview. We use an information sheet as the interviews present no more than minimal risk and do not involve procedures for which consent is required outside a research context.

6) Procedures

SAMHSA requirements:

Once a participant has consented to be part of the study, the research staff will go over the sections of the GPRA paper document. The surveys will be administered orally with responses recorded by a research staff member. The completion of the GPRA survey is expected to take 60 minutes and will not result in treatment being delayed or withheld. Once the initial survey is complete the research staff will ask the participant to fill out the Locator Form to the best of their ability. The Locator Form includes contact information for friends/family and is intended to help locate participants who are no longer engaged in the MATCH program. No undue pressure will be placed on patients to complete this form. This information will be kept separate from their medical record.

Two follow-up surveys will be administered, one at 6 months from enrollment and one at termination from the MAT program. For the second and third surveys, participants will be contacted using the information on the Locator Form. Participants will be given the option of completing the surveys at the clinic or at a convenient public location such as a coffee shop or library. The surveys will be administered orally with responses recorded by a research staff member. The research staff will repeat the protocol from the initial survey collection. Participants will receive a \$30 supermarket gift card after completing both the initial and 6-month survey.

*If participants have strong emotional responses to filling out the survey the research staff will have a list of mental health services for referral. Additionally, the MATCH behavioral health consultant can be called in if there is a crisis.

The GPRA data will be reported to the RMC Research Corporation using a Secure File Transfer Protocol (SFTP).

Pilot evaluation:

1. Qualitative Data Collection

Practice-level data collection

- Researchers will shadow and observe staff in the clinic. Observation will occur in the lobby and front desk, charting areas/offices, examine rooms with prior permission, and pharmacy spaces. Practice observers will follow clinicians and staff, observing how providers work together and how MAT care is delivered to patients. Patients will be notified of the observer by the primary care provider and will be given the option to decline observation. If permitted, the observer will follow providers into visits. The focus is on how providers deliver the MATCH program.
- During the practice observations, field researchers will take jottings or notes. The study research team will not be collecting PHI and no identifiers will be recorded. All notes will be de-identified, and jottings will be destroyed after the full fieldnotes are prepared.

Practice member-level data collection

- Practice members who are on MAT teams or interact with MAT patients will be recruited for 30 minute semi-structured interviews focused on the MATCH program. Topic areas addressed in the interview are: leadership and mission of the MAT program, how well the MAT program fits into the rest of the clinics' work, how MAT visits affect the clinic, internal team function, population management and monitoring, identifying resources for complex patients, and measuring progress. The interviews are voluntary and requested by researchers rather than other clinicians or staff. Prior to being interviewed, the staff member will receive an information sheet explaining what is being observed and why. Research staff will request permission to record the interview. If the interviewee agrees to have the interview recorded, the recorder will be turned on and verbal consent will be obtained at the beginning of the recording, again without requesting identifying

information (i.e., name of interviewee). If the interviewee declines to be recorded, but agrees to be interviewed, the interviewer will take notes during the interview, and write up these notes after the interview is complete.

Patient level – Semi structured interviews data collection

- A small subset of patients in the MATCH program will be recruited to participate in 40-60 minute semi-structured interviews either in-person or via telephone. We will use previously approved EHR data to obtain demographic information and information about the patient's participation in the MATCH program to inform the qualitative interviews with patients. Any printed documents with EHR information will be immediately shredded or placed in confidential recycle bins after the interview. These participants will be asked questions about their experience in the MATCH program, about their living and work situations, peer networks, and other social services/supports they utilize. These semi-structured interviews are completely voluntary. We use an Information Sheet to consent people before an interview, and request permission to record the interview. If the interviewee agrees to have the interview recorded, the recorder will be turned on and verbal consent will be obtained at the beginning of the recording, again without requesting identifying information (i.e., name of interviewee). If the interviewee declines to be recorded, but agrees to be interviewed, the interviewer will take notes during the interview, and write up these notes after the interview is complete. Participants will receive a \$25 gift card after completing the interview.

*If participants have strong emotional responses during the interview, the interviewer will have a list of mental health services for referral. Additionally, the MATCH behavioral health consultant can be called in if there is a crisis.

MAT team collaborators – semi structured interviews

- During the interview, team members will be asked about their thoughts and experiences as a member of the interdisciplinary MAT evaluation group focusing on collaboration experiences and organizational aspects of the study. The interview will take about 60 minutes, and with permission, the interviews will audio-recorded.

2. Quantitative Data Collection

EHR data and chart review

The number of providers at Scappoose and Richmond who acquired a waiver to prescribe MAT drugs between Sept 1, 2014 – present will be counted.

Data extracted electronically from the electronic health record and manually through chart reviews will include the following: patient demographics (i.e., age, sex, race/ethnicity, medical and psychiatric comorbidities), dates (service, visit, lab, diagnoses referral, other dates as they relate to the MAT program, etc), encounter data (type, provider, etc), payment & insurance type, diagnoses, medication information, procedures, screenings, and lab values.

7) Data and Specimens

a) Handling of Data and Specimens

SAMHSA requirements:

Regarding the GPRA survey, each participant will be assigned a code # and a research staff member will record it on the participant's surveys. The code sheet which connects the patient's name to their code will be kept separate from the surveys. The code sheet will be stored on an encrypted network and only accessible by the research team. Data transferred to the RMC Research Corporation will be completely de-identified, and only contain the code. These data will be transferred through a SFTP. The GPRA survey responses are the only data that will be transferred to RMC Research Corporation.

The patient Locator Forms will be stored in locked file cabinet at Scappoose and will only be used by the research staff administering the surveys.

Pilot evaluation:

Practice-level and practice member-level

- All fieldnotes will be de-identified, and jottings will be destroyed after the full fieldnotes are prepared. Fieldnotes will not include names, but refer to persons by role. Practices will be referred to using an identifying number (practice 1, 2). When reporting data in publications, reports, or grants data will be presented in a de-identified way.

Patient level and MAT team collaborator – Semi structured interviews data collection

- Interview data will be organized by participant code #. Interview recordings will be stored on the encrypted OHSU network. Interviews will be professionally transcribed and all identifying data within the transcripts will be removed and replaced with pseudonyms. After analysis is completed, the audio-recordings are destroyed.

Patient level –EHR data and chart abstraction

- The Family Medicine Data Team will extract data from the EHR, including patient MRN and name. All data will be shared through the encrypted OHSU network. The data will be stored on the encrypted OHSU network.
- Regarding the chart abstraction, research study team member(s) will abstract data from the patient's electronic health record using a Data Collection Sheet with only study ID numbers listed. A cross walk will be created matching the subject names and MRNs with their study ID number. The data collected and the code list will be saved in files and stored on either the password-protected OHSU-sanctioned cloud storage ("Box") or an OHSU X or H: drive.
- Data will be merged, and at that time MRNs and patient names will be removed. Only the study ID number will remain in the data set.
- All procedures will reduce the risk of breach of confidentiality, the risk of which we believe will be minimal. All computers where analyses are done are password

protected, and back up files will be kept on all analyses conducted, which will also be housed in secure computer locations.

b) Sharing of Results with Subjects

Study results will be shared with participants if requested, at completion of the study. Results will be aggregated and will not include identifying information of the clinic site, staff/providers, or patients.

c) Data and Specimen Banking

No specimens will be collected. No data will be used for future research planned at this time. Survey responses may be kept in a repository by RMC Research Corporation if approved by the Solutions IRB and will not be accessed by anyone outside of that team.

8) Data Analysis

SAMHSA requirements:

No OHSU staff will be analyzing the data from survey responses. The data will be analyzed by RMC Research Corporation. The OHSU research team will have access to their findings.

Pilot evaluation:

Qualitative Data

The research team will analyze qualitative data using a grounded theory approach to identify patterns. The first step in the analysis process will be to understand each practice as a separate study in its own context. To do this, the qualitative team will read all data from a single practice to understand what happens during MATCH implementation from the practice member and patients' perspectives, including: (1) factors that emerge as barriers / facilitators to implementation (e.g., practice, context / environmental, MATCH program, and patient characteristics); and (3) how MATCH program is implemented and adapted to fit the local setting. Particular attention will be paid to facilitators and barriers leading to a patient excelling or struggling in the MATCH program. Atlas.ti 7 will be used for analysis.

Quantitative Data

The Family Medicine biostatistics team will use data extracted from the EHR to generate descriptive statistics. We will conduct analyses to validate algorithms used to assess retention rates via electronic extraction of EHR data by comparing with data with retention data abstracted through manual chart review. We will also examine predictors of initiation and retention of patients in the MATCH program, and potential changes in these variables over time. Treatment trajectories will be assessed for patterns.

9) Privacy, Confidentiality and Data Security

SAHMSA requirements:

Data sent to RMC Research Corporation by Scappoose clinic will contain a code number. Only OHSU research staff will have access to the code sheet. Consent forms and locator forms will be stored in locked file cabinet at Scappoose and will not be provided to RMC Research.

RMC Research Corporation has set up a Secure File Transfer Protocol (SFTP) website for each clinic for clinic research staff to transfer the data. Once received, data will be stored on a secure password protected server than can only be accessed by RMC Research Corporation study staff. RMC Research Corporation will retain this data for two years after the completion of the evaluation, at which time all data will be transferred to DVDs RMC Research Corporation study staff.

Pilot evaluation:

Qualitative Data

Qualitative data will be stored on the OHSU encrypted network. These data will only be accessible to OHSU research staff. The code sheet associating the subject identifiers and the code #s will be kept secure on the encrypted OHSU network. All reports will describe results in aggregate form only. Code #s will never be reported in any analyses. All data analysts and investigators work in a secure research setting. All computers used for analyses are password protected. After analyses are completed, the audio-recordings are destroyed.

Quantitative Data

The EHR data will be downloaded from OHSU EHR by the Family Medicine Data Team. All Family Medicine Data Team staff have completed HIPAA and Responsible Conduct of Research Training. This data set will be collected under a Waiver of Authorization. MRNs and patient names will be removed and only study ID numbers will remain in the data set. The code sheet associating the MRNs and patient names and the study ID numbers will be kept secure on a restricted OHSU network drive in a limited access folder. All reports will describe results in aggregate form only. Study ID numbers will never be reported in any analyses. All procedures will reduce the risk of breach of confidentiality, the risk of which we believe will be minimal. All data analysts and investigators work in a secure research setting. All computers where analyses are done are password protected, and back up files will be kept on all analyses conducted, which will also be housed in secure computer locations.

Regarding the chart abstraction, research study team member(s) will abstract data from the electronic health record using a Data Collection Sheet with only study ID numbers listed. A cross walk will be created matching the subject name and MRN with their study ID number. The data collected and the code list will be saved in files and stored on either the password-protected OHSU-sanctioned cloud storage ("Box") or an OHSU X or H: drive.

10) Risks and Benefits

a) Risks to Subjects

SAMHSA requirements:

Participants may experience discomfort with sensitive topics in the GPRA survey, but we believe this will be only minimal risk as it includes similar questions asked in standard care for their opioid use disorder treatment. Surveys interviews will be stopped if research staff observe strong participant distress. Research staff will have resources

MAT

available to refer the participants to or call in the MATCH behavioral health consultant if necessary.

There is a small risk of loss of privacy when data are transferred to RMC Research Corporation. Great effort will be made to prevent this risk, as noted above.

Pilot evaluation:

Participants may experience discomfort with sensitive topics in the semi-structure interview. Questions can be skipped if the participant wishes. Interviews will be stopped if research staff observe strong participant distress. Research staff can also provide warm hand-off to a MATCH behavioral health consultant or refer the participants to a higher level of care, if needed.

There is a risk of a loss of confidentiality for subjects, though this risk is minimal. We will undertake several steps, as indicated above, to make this risk negligible.

b) Potential Benefits to Subjects

SAMHSA requirements:

Participants who complete the initial and second GPRA survey will earn \$30 supermarket gift cards.

Pilot evaluation:

For participants in the pilot evaluation, there is no direct benefit.