

**Buprenorphine in Office-Based Opioid Treatment:
Barriers, Beliefs and Benefits**

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Submitted to the Graduate Faculty of the
Department of Behavioral and Community Health Sciences
Graduate School of Public Health in partial fulfillment
of the requirements for the degree of
Master of Public Health

University of Pittsburgh

2018

UNIVERSITY OF PITTSBURGH
GRADUATE SCHOOL OF PUBLIC HEALTH

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Abstract

Background: Over 50 Americans die each day from an acute opioid overdose. In 2015, over 52,000 people died from a drug overdose. Given the gravity of the opioid epidemic within the United States, effective and expansive treatment methods are necessary to adequately address and reduce the impact of Opioid Use Disorders (OUD).

Purpose: Opioid-agonist-based medication assisted treatment is the most effective pharmacological intervention to treat OUD. Unlike methadone, which is limited to specialized clinic settings, buprenorphine is a long-acting partially synthetic opioid medication approved for the treatment of Opioid Use Disorders since 2002. Despite the effectiveness of this pharmacological intervention and approval within office-based settings, like primary health centers, delivery of buprenorphine medication remains limited. The purpose of this literature review is to identify and synthesize the barriers to, beliefs surrounding, and benefits of incorporating office based opioid treatment (OBOT) in non-MAT specific settings.

Methods: A literature search was conducted within PubMed to identify relevant peer-reviewed papers. Boolean search terminology was used, and the search was limited to papers published within the last five years.

Results: Eight relevant articles were identified, which included qualitative and mixed-method studies. Literature revealed several barriers to buprenorphine treatment implementation including:

concerns surrounding staff abilities, strict federal oversight, low perception of need for treatment, limited training within residency curricula, and stigma surrounding substance use. Beliefs discovered include the ideas that: patients with OUD are stressful and challenging, providers' self-perceptions that they are ill-equipped to meet patient needs, buprenorphine is "trading" addictions, and there is not enough time to treat individuals with OUD in clinical settings. Perceived benefits of implementation include a sense of satisfaction for being a part of the solution and the reward of watching a patient and their family heal. Given the gravity of the opioid epidemic within the United States, these findings have public health significance, as the research reviewed indicates major barrier to buprenorphine OBOT expansion and service provision.

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1.0 Introduction

The purpose of this paper is to identify the barriers to, beliefs surrounding, and benefits of buprenorphine office-based opioid treatment implementation within primary health care, family medicine, general practice, and other similar settings. The United States of America is experiencing a public health crisis with the current opioid epidemic, with over 50 individuals dying each day from acute overdose¹. Untreated substance misuse costs the United States over \$740 billion per year². Opioid-agonist-based medication assisted treatment is validated frontline care for the treatment of opioid use disorders (OUD)³. While methadone remains limited to specialized clinics due to federal regulations—primarily housed in urban areas—buprenorphine treatment has been approved for non-hospital and non-MAT-clinic specific settings since 2002⁴. Office-based opioid treatment (OBOT) with buprenorphine has incredible public health significance as it offers a unique opportunity to expand treatment service and availability, especially in rural areas⁵. Chapter 2 describes the background of the opioid epidemic, reviewing changes to the standards of pain management, and the increase of prescription opioid medication prescriptions written within the United States, the non-regulated marketing and promotion of such drugs, and the epidemiological and demographic data surrounding Opioid Use Disorders. Chapter 3 discusses the primary interventions of abstinence, cognitive behavioral therapy, and the opioid agonist medication approved for treatment. Chapter 4 discusses the literature search methodology used within this review and includes a PRISMA table and table of search results. Chapter 5 discusses the results of the Boolean terminology driven literature review, the major themes identified within

the peer-reviewed articles are presented. Chapter 6 summarizes and discusses the findings, recommendations and implications of this literature review. Limitations are also discussed.

2.0 Background

2.1 The Problem of Pain

Opioid-based narcotic medication and products have been used for centuries for their analgesic qualities and unique abilities to provide individuals with an experience of relaxation. These unique properties have also played a role in some individuals' proclivities for using such substances for personal relief or pleasure, e.g., to get "high." Before 1800, physicians considered pain a natural part of the human experience and aging process. During this time there was no regulation on opioid-based products, and they were regularly marketed to the public for a variety of ailments. The situation changed in the early 1900s when doctors began limiting the use and prescription of medication, to the point of demeaning patients with uncontrolled pain⁶. The passing of the Narcotic Control Act of 1974, which was written to eliminate illicit heroin use and prescription morphine dependence, reinforced the cultural beliefs inherent within the medical community at that time, and held opioid medication as a last-resort option for effective pain management⁶.

After this legislation was passed, medical doctors were even more hesitant to use or prescribe opioid-based medications fearing their addictive qualities and the potential legal consequences. However, in 1973, just prior to the passing of the Narcotic Control Act, a manuscript was published that denounced the failure of medical professionals operating an inpatient unit to treat the pain of their patients⁷. This manuscript remained in the shadow of the 1974 legislation change until the early 1980s when a few small retrospective studies were published that supported this manuscript and set the trajectory of pain management in the 21st

century. The first was a short five-sentence letter to the editor of the New England Journal of Medicine, which lacked scientific rigor yet stated:

Recently, we examined our current files to determine the incidence of narcotic addiction in 39,946 hospitalized medical patients who were monitored consecutively. Although there were 11,882 patients who received at least one narcotic preparation, there were only four cases of reasonably well documented addiction in patients who had no history of addiction. The addiction was considered major in only one instance. The drugs implicated were meperidine in two patients, Percodan in one, and hydromorphone in one. We conclude that despite widespread use of narcotic drugs in hospitals, the development of addiction is rare in medical patients with no history of addiction⁸.

The second piece, was a small retrospective study on 38 patients with chronic pain, of which the authors note only two patients developed a subsequent dependence on prescribed opioid medication⁶. These clinical opinions set the foundation for a sharp change in pain management and the strong stance of its under-treatment.

This belief that the current state of practice was leading to ineffective pain management, and the non-addictive qualities of opioids, slowly blossomed until the early 1990s. The Annals of Internal Medicine published an article in 1990 that bemoaned the “woeful neglect of the analgesic needs of the very sick and dying” and the American Pain Society launched a campaign calling “pain as the fifth vital sign” in 1995^{6,9}. Suddenly, with a new standard of care being established, major institutions and stakeholders came out against the perceived under-reliance on opioid analgesic medication, especially for acute pain^{6,10-12}. An amendment to pain management within

the busy and burdened United States healthcare system seemed to happen overnight, rapidly swinging the pendulum from under-reliance on opioid analgesics to a deadly over-prescribing.

These changes in perspective were adopted by the Joint Commission on the Accreditation of Healthcare Organizations, The Veterans Health Administration, and the wider medical community. In 1998, the Federation of State Medical Boards assured physicians they would experience no consequences for changing or increasing the frequency, amount and strength of their opioid prescribing.¹ In 2004, the same Federation furthered their stance when they asked medical boards to hold clinicians accountable for under-treating pain, reprimanding doctors for any perceived under-prescribing of opioid medication pain treatment. Thus, clinical standards for pain management were changed, requiring physicians and health providers to manage physical discomfort and relieve symptoms of this “fifth vital sign” in a more drastic way. These changes in scope and approach dramatically increased the use and prescription of opioid analgesic medications, subsequent dependence, and ultimately, the opioid epidemic as we know it today.^{6,10-}

¹².

2.2 Opioid Use Disorder

Opioid Use Disorder (OUD) is a medical condition and chronic brain disease, defined in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as a “problematic pattern of opioid use leading to clinically significant impairment or distress”¹³. OUDs involve compulsive, repetitive drug seeking and use, despite the presence of negative consequences to an individual’s social, occupational, financial, or family functioning^{14,15}. Individuals with opioid dependence experience an increasing loss of control over the amount of

their opiate intake, emotional dysregulation when drug access or use is prevented, and are at higher risk for contracting infectious diseases (e.g., HIV)^{14,16}. The misuse of opioids produces changes within neurobiological brain structures and overall impairment of the reward pathways^{14,17-19}. These changes, in combination with repetitive use, serve to increase tolerance, positively reinforce the negative habit, and create a long-term impact on overall health^{15,20}.

Per the DSM-5, diagnoses of OUD range from mild (2-3 symptoms), moderate (4-5 symptoms), to severe (6 or more). Criteria for diagnosis must occur within a 12-month period and include: large quantities of opioid intake, increased desire for use and/or unsuccessful discontinuation of use, spending time in the acquiring, using or recovering from use, physical and psychological cravings, continued use despite consequences, loss of interest in social, recreational or employment activities, increased tolerance, and withdrawal¹³.

Quality of Life (QOL) is poorer among individuals diagnosed with an OUD. Individuals with OUD score lower on physical and emotional well-being than the general population and individuals with other chronic illnesses (e.g., hypertension) and are impaired across many life domains, including activities of daily living, social and employment functioning, and overall health²¹. Additionally, the discriminating and disenfranchising effects of stigma have been shown to negatively impact an individual's social functioning and overall health, compounding the already negative and socially ostracizing effects of OUDs²²⁻²⁹.

OUD has a similar etiology and follows a pattern to other chronic health issues and should be treated as such^{18,19}. Because of the chronic nature of OUDs, as well as the fact that it shares similarities of personal choice, impact and influence of the personal environment, and genetic liability components of other chronic illnesses like diabetes, asthma and hypertension, individuals

with OUDs should be treated with the same care and respect from the medical wider community as those with these other diseases^{30,31}.

2.3 Epidemiology and Demographics

Substance misuse costs our country over \$740 billion per year in lost work, healthcare costs, and criminal justice expenses, and prescription opioid misuse account for over 10% (\$78.5 billion) of these costs². Well over 50 Americans die each day from an acute opioid overdose, and over 50% of those deaths are related to a prescription medication¹. Annual opioid overdose rates are higher than the peak death rates of firearms, automobile accidents, and HIV³¹. In 2014, over 240 million opioid prescriptions were written within the United States, not including refills, and in 2015 over 52,000 people died from a drug overdose³¹⁻³³. Over 38% of American citizens (more than 90 million individuals) use prescription opioids, 21-29% of individuals prescribed opioids for chronic pain misuse their prescription, more than 4% of the American population (more than 13 million) uses prescription opioid medication for non-medical purposes, and 2.5 million individuals have developed an Opioid Use Disorder^{32,34-36}. Of adults who misuse prescription opioid medication, nearly 60% report using without a prescription and over 40% report getting prescription medication from a friend or family member³⁶. All of these factors play a role in the rising overdose deaths rates within the United States, which increased by 20% in 2016, totaling 64,070³³. Rates of emergency department visits involving prescription opioid medication went from 82.5 to 184.1 per 100,000 from 2004 to 2011³⁷.

Racial disparities in opioid prescribing, especially for non-definitive conditions (e.g., back pain) may play a role in why whites experience the highest rates of opioid morbidity and

mortality³⁸. Non-Hispanic whites are most likely to receive an initial opioid prescription, are at greater risk for non-medical use of such medication, and are most affected by heroin and prescription opioid related overdoses³⁹. All ages, sexes, regions and urban locations of the United States experienced increases in opioid overdoses in 2016, particularly individuals age 35-54 years, urban locations (54%), and the Midwestern (70%), Western(40%), and Northeastern (21%) regions⁴⁰. Past-year heroin use among non-Hispanic white individuals has increased over 114%, and the highest rates of heroin use is seen amongst underinsured, low-income males, age 18-25, with over 61% of users reporting poly-substance use^{41,42}.

2.4 OxyContin

The United States makes up 5% of the world’s population, uses 80% of the world’s opioid medication, and nearly 99% of the world’s hydrocodone. Over 4 million Americans have used a prescription opioid for non-medical purposes in the past year^{1,16}. This dramatic over-prescription of medication did not happen overnight. On the coattails of the “fifth vital sign” and other resounding medical stakeholder support for increased opioid prescribing, Purdue Pharmaceuticals announced a new drug, OxyContin, in 1996. This “revolutionary” formulation was specially designed to provide a slow release of oxycodone, a semi-synthetic opioid medication for moderate to severe pain, over an 8-12-hour period^{6,43}. Unlike most other oxycodone products and other opioid-based medications, this formulation was free of other pharmacological pain-relieving agents, such as acetaminophen or ibuprofen — agents, traditionally found to be irritating (e.g., liver toxicity or stomach bleeding) to individuals using prescription opioids for non-medical purposes^{6,11,44}.

Purdue quickly took advantage of the Federal Drug Administration's (FDA) limited oversight of prescription marketing, producing aggressive and effective campaigns, utilizing a pharmaceutical salesforce of expertly trained personnel. Driven by OxyContin specific sales incentives, these pharmaceutical representatives went across the country to "educate" stakeholders on this powerful, effective, and "non-addictive" medication, obtaining incredible physician (and patient) buy-in. From 1996 to 2000, revenue from OxyContin grew from \$48 million to nearly \$1.1 billion; prescriptions for this new formulary rose from 670,000 to over 6 million^{6,11,44}. By 2010, OxyContin earned Purdue Pharmaceuticals \$3.5 billion dollars and was the United States' 5th highest in brand name prescription medication sales¹².

Purdue continued its tactics in other ways, using the change towards a compassionate approach to pain management to its advantage⁴⁵. Over 40 extravagant medical training retreats were held for nurses, doctors, pharmacists and other professionals at resort locations throughout their medical marketing efforts. In total, over 5,000 individuals attended these conferences, were recruited, and ultimately trained as ambassadors of the Purdue speakers' bureau. Purdue claimed if you limit pharmacological intake to one time per day, you would reduce or eliminate misuse of the medication, also eliminating the risk of addiction. They backed up these claims with profiles detailing the favorable prescribing habits of individual physicians they claim matched national standards. Armed with this information and the call to successfully treat the fifth vital sign, physicians and other professionals returned home with new information and patient coupons for a free 7-30 day supply of OxyContin⁴⁴.

2.5 Reformulation

Purdue's aggressive and falsified claims against the addictive qualities of its medication drew federal attention in 2007¹². The United States Drug Enforcement Administration pursued legal action against the company and Purdue pled guilty to falsifying marketing materials and downplaying the possibility of dependence with OxyContin. However, this court finding did nothing to curve OxyContin sales, which only continued to rise. It was not until 2013, when the Federal Drug Administration banned OxyContin from becoming a generic medication, that began to see a major acknowledgement and movement towards preventing the inherent misuse and diversion risks of this and other opioid based medications¹².

Days before Purdue was scheduled to lose its patent on OxyContin, the FDA blocked its advancement into a generic formulation. This block, designed to prevent further public health consequences from this drug, forced Purdue to reinvent their drug in a way that it was harder to use outside of its intended purposes (e.g., crush and intake through nasal passages). Changing the chemical makeup of this medication meant that individuals using it for medical and non-medical purposes were forced to adjust. It also meant that Purdue would maintain its stronghold on this medication, securing a new patent for this reformulation. Thus, driven by adverse physical consequences from this reformulation, individuals were forced to address their physical dependence to opioid-based medication through whatever means necessary^{6,11,12,46}.

2.6 Prescriptions, Heroin and the American Population

America's evolution from the over prescription and misuse of opioid pain medication to illicit heroin use can be seen in within policy changes and pharmaceutical reformulation. OxyContin's original formula is estimated to have the highest rate of non-medical use among all opioid analgesic medication¹². Dosage of prescription medication is typically accepted as known, dependable and "safe" because it comes from a doctor and a pharmacy¹². This belief helps prevent against internalized shame of being a "junkie" or an "addict," regardless of whether the prescription came from their doctor or a dealer, removing the threshold of stigma surrounding heroin⁴⁷. Data on the transition of from pills to heroin shows that an overwhelming number of individuals made this transition because of formulaic changes in medication or for financial reasons. Federally mandated changes to prescribing habits combined, with changes to a pharmaceutical makeup less likely to bring about desired effects, changed the route and style of opioid misuse³⁹. When the pill supply chain was interrupted or low, the price too high, or the changed formula no longer effective for intended use, individuals could turn to heroin as a cheap and simple alternative. By that time their physical dependence was often so high that any shame and guilt surrounding a switch to heroin, a drug they used to look down on, was easily overlooked so the symptoms of withdrawal could be prevented.^{12,46-48}

Changes in type of opioid use can be correlated to the formulaic switch in OxyContin's less than desirable street value^{47,48}. Since 2010, overdose deaths related to illicit non-prescription opioids has increase more than 200% and over 400,000 Americans have used heroin in the past month^{10,16,33}. Heroin-related overdoses were stable from 1999-2006 but have been steadily increasing since 2007⁴⁹. Despite heroin being a drug that is completely banned by the united states federal government, it remains an inexpensive and easily accessed substance that is becoming

increasingly more dangerous with the introduction of Fentanyl, a fully-synthetic and highly potent opioid medication^{12,50}.

Fentanyl analogue use is steadily increasing within heroin supplies, used as a cheap filler to “cut” the product while also strengthening potency⁵¹. The effects of fully-synthetic opioid Fentanyl products—50 to 100 times more potent than Morphine and heroin—has dramatically increased mortality amongst the using population, as the levels of fentanyl within street products are unknown^{52,53}. Prescribing rates of Fentanyl products have not increased within the United States, but Fentanyl-related emergency department visits increased by 104% between 2004 and 2011, and Fentanyl related fatalities have risen by 79%^{52,54}. The Drug Enforcement Agency reported a 259% increase in Fentanyl seizures from second half of 2013 to the first half of 2014⁵². Perhaps even more alarming is the increasing discovery of Carfentanyl within heroin batches. This product, designed for veterinary use on large animals, is 100 times more potent than traditional Fentanyl⁵¹⁻⁵⁴. This rise in illicit Fentanyl and Carfentanyl use amongst illicit heroin batches and rising overdose rates demands a swift, inclusive and widespread medical approach to opioid dependent care.

3.0 Treatment and Other Interventions

Given the gravity of the opioid epidemic, effective treatment and intervention methods are necessary to adequately address and reduce the impact of Opioid Use Disorders and prevent mortality. Within the literature, there are three primary treatment interventions within the clinical profession: Abstinence, Cognitive Behavioral Therapy (CBT) and opioid agonist medication assisted treatment or therapy (MAT) through methadone or buprenorphine. Each of them has been used independently, and more recently, clinicians and researchers are combining them to address OUDs from a multilayered perspective.

3.1 Abstinence-Based Recovery

Abstinence as an approach to opiate misuse, regularly pursued in conjunction with the spiritually based 12-Step model pioneered by Alcoholics Anonymous in 1935, has been shown to be the most common, longest used, yet most ineffective approach to opiate misuse^{55,56}. People using abstinence-based interventions have demonstrated lower rates of treatment compliance, increased experiences of marginalization, higher rates of relapse, and greater psychological distress among individuals with an OUD as compared to those with any other substance use disorder⁵⁷⁻⁵⁹.

Treatment professionals are working to combine this enduring intervention with other approaches such as Acceptance and Commitment Therapy (ACT) and Dialectical Behavioral Therapy (DBT). The addition of these validated, mindfulness-based treatment approaches to

mental and behavioral health concerns are used within inpatient and outpatient substance use disorder treatment settings to offer a fresh perspective to abstinence-based models. These modalities are used in conjunction with OUD treatment because they have exhibited strong potential to address the symptomology of co-occurring mental health disorders, all while complementing the core philosophy of the 12-Step model^{60,61}. However, the addition of these models does not change the underlying approach of this model, nor does it assist individuals upon discharge, who are most at risk for using illicit substances upon community reentry.

Due to its strict focus on abstinence from all mind-altering substances, including the proper administration of medication assisted treatment, it can be challenging to find 12-Step members and similarly grounded clinical practitioners to accept individuals on maintenance medication. Individuals on MAT are stigmatized and marginalized by the 12-Step community because they are not seen as sober, being in recovery, or having “clean” time^{57,58,62,63}.

3.2 Cognitive Behavioral Therapy

Cognitive Behavioral Therapy is one of the most well-known and widely researched behavioral treatment intervention, effective for a variety of psychological and behavioral disorders⁶⁴. It has been used effectively to treat depression, anxiety, schizophrenia, insomnia, smoking, eating disorders, and additional mood and health concerns⁶⁵. CBT has been shown to assist individuals with OUDs to retain in treatment longer compared to other psychotherapeutic treatment interventions, helping to increase treatment outcomes, and positively impact co-occurring mental health issues⁶⁴⁻⁶⁶. CBT has been shown to increase coping skills, self-image, self-esteem and self-efficacy⁶⁴. It has been shown to be so effective that computer-based models

are being tested to increase its availability. However, while effective within itself, especially with co-occurring disorders, it is most effective in the treatment of opiate misuse when combined with Medication Assisted Treatment⁶⁷⁻⁶⁹. Behavioral treatment of OUD without pharmacological intervention has shown that over 80% of individuals return to illicit drug use³.

3.3 Opioid Agonist Medication Assisted Treatment

Opioid agonist-based medication assisted treatment (MAT) with methadone, buprenorphine, or a buprenorphine and naloxone combination drug, is shown to be the most effective treatment intervention for opioid use disorders³. Opioid agonist MAT increases treatment retention, decreases the transmission of HIV and Hepatitis C, and reduces illicit substance use and mortality^{4,70}. Long-term maintenance on these medications has the most promising treatment results, versus short-term use for detoxification³. Methadone is limited to practice within federally regulated clinics, primarily available within urban settings^{32,70,71}. Buprenorphine is the only opioid agonist approved for office-based opioid treatment, allowing it to be used within primary health, family practice and other similar medical settings⁴.

3.4 Methadone

Methadone is a long-acting synthetic opioid, and full mu receptor filler, developed in the late 1930s³. Physician treatment of OUDs through the use of opioid-agonist-based medication was limited by the Harrison Narcotic Act of 1914. Around 25,000 physicians were indicted under this

act for using opioid medication to treat dependent patients, and approximately 2,500 of these physicians received a prison sentence⁷¹. For decades, despite the availability and known effectiveness of pharmacological treatment for OUDs, and two Supreme Court rulings that counteracted the Harrison Narcotic Act, physicians continued to limit their prescribing as a treatment for opioid-dependence for fear of indictment^{71,72}. Medical professionals took notice of methadone's effectiveness in relieving the craving and withdrawal symptoms of patients with OUD in 1947, but no major changes to treatment standards were made until decades later³.

In 1965, Dole and Nyswander produced an article equating opioid-dependence to a metabolic issue, similar to that of diabetes⁷³. This laid the groundwork for specialized clinical settings to be established to treat OUD with the pharmacological advancements of methadone compared to traditional Morphine⁷¹. Unlike the short-acting morphine therapies used in the past that required multiple doses over the course of a day, methadone was shown to prevent craving and withdrawal symptoms over a 24-36 hour period⁷¹. This daily dose medication allowed a slow and necessary change in OUD treatment to begin. Subsequently, federally-regulated methadone treatment facilities established themselves in urban settings as the primary mechanism for MAT care within the United States. However, these clinics are greatly limited in their geographic scope, long waiting lists, limited acceptance of insurance, and daily clinical attendance required to receive the daily regulated dose⁷⁴. Currently, an estimated 330,000 patients in the United States are enrolled in methadone maintenance programs, and these licensed clinics remain one of the most heavily regulated medical treatments within the federal government of the United States^{32,70,71}. Guidelines for methadone recommend a minimum of 12 months maintenance for stabilization, with some clients electing for long-term methadone care³².

3.5 Buprenorphine

Buprenorphine is a long-acting partially synthetic opioid medication, originally developed for pain management, that was approved in October 2002 by the U.S. Food and Drug Administration for opioid dependence within non-clinic settings⁴. This pharmacological intervention represents the first opioid-agonist medication available for office-based, primary care treatment since 1914. Buprenorphine is taken sublingually and retains agonist and antagonist qualities, having a strong affinity for, and partial filler of, the mu opioid receptor, while also acting as an agonist of the kappa opioid receptor. The medication works to stabilize the opioid receptors of an opioid-dependent individual⁷².

While buprenorphine is less stigmatized within the medical and recovery communities than methadone, as it does not produce the same euphoria or sedation characteristics compared to full-agonist opioids. Buprenorphine's unique chemical makeup prevents withdrawal symptoms and cravings through its partial-filling of the receptors⁴. Buprenorphine has a plateau effect that prevents the drug from having any physical or psychological effect above a 16-32 milligram dosage and a strong half-life of up to 60 hours. Additionally, having a stronger affinity for the mu receptor compared to other opioids, buprenorphine reduces and overpowers the effects of other analgesic substances, such as heroin or OxyContin. These qualities allow for greater ease of dosage adjustment or withdrawal compared to methadone, and prevent respiratory depression and overdose due to its ceiling effect^{4,75}.

Shortly after FDA approval, another formulation of buprenorphine was released with a 4:1 ratio with naloxone, an opioid antagonist, to prevent diversion and illicit use. Like buprenorphine, naloxone has a high affinity for, and binds strongly to the mu opioid receptor, working as an antagonist. However, as buprenorphine is administered sublingually, the bioavailability of

naloxone is limited in this fashion. If an individual attempts to alter the medication or administer it in a way other than as prescribed (e.g., intravenous), the naloxone would become activated, overpowering the buprenorphine and precipitating acute withdrawal symptoms for an opioid-dependent individual⁴.

Federal standards for buprenorphine prescribing to treat OUD were set by the Drug Addiction Treatment Act of 2000, allowing physicians to obtain a waiver through the Controlled Substances Act and treat up to thirty patients. In 2006, the Office of National Drug Control Policy Reauthorization Act increased the limit to 100 patients for practitioners who had prescribed buprenorphine at the previous limit for a minimum of one year. This limit was challenged, and in 2016, addictions specialists were allowed to see up to 275 patients, and nurse practitioners and physicians assistants were also granted waived prescribing of buprenorphine for OUDs⁷⁶.

Individuals receiving buprenorphine and counseling have significantly lower healthcare costs than individuals not receiving treatment, while buprenorphine-only treatment costs are similar to those of individuals participating in abstinence based counseling⁷⁷. It is estimated that over 1.3 million citizens receive a prescription for buprenorphine/naloxone to treat an OUD, and more buprenorphine-based treatment products are being developed to sustain medication release and increase treatment retention³². However, despite these continued advancements in buprenorphine based pharmacological intervention, office-based opioid treatment remains limited beyond specialty clinics. These advancements in pharmacological research further highlight the need to further research on addressing the barriers preventing the expanded implementation of buprenorphine medication assisted treatment within primary healthcare and other similarly structured medical settings.

4.0 Methods

Despite federal approval of buprenorphine prescribing for OUD in office-based settings since the early 2000s, a wealth of scientific literature supporting the effectiveness of this pharmacological intervention, buprenorphine office-based opioid treatment remains limited in availability within non-MAT-clinic settings (e.g., family medicine, primary health care, and general practice).^{75,78-81}. Through critical literature review and synthesis, this thesis seeks to examine the current barriers against, beliefs about, and benefits of buprenorphine treatment for Opioid Use Disorders within office-based health care settings in the United States.

4.1 Literature Search

Boolean search criteria were created to identify academic studies exploring buprenorphine's use in office-based settings. Search criteria was developed to incorporate common terminology for buprenorphine medication, including brand name drugs (e.g., Suboxone), common pharmacological combinations (e.g., naloxone) and familiar ways of describing such medical treatments (e.g., opioid replacement therapy). A PubMed search was conducted using the following terms: (((buprenorphine [tiab] OR naloxone [tiab] OR suboxone [tiab] OR zubsolv[tiab] OR opioid replacement therapy [tiab] OR opioid substitution [tiab] OR opioid maintenance [tiab] OR medication assisted treatment [tiab]) AND (primary care [tiab] OR physicians[tiab] OR office based opioid treatment [tiab] OR primary health [tiab] OR office based

[tiab]) AND (drug dependence [tiab] OR opioid addiction [tiab] OR opioid abuse [tiab] OR opioid-related [tiab] OR opioid dependence [tiab] OR opioid use disorder [tiab]))).

4.2 Selection Criteria

While buprenorphine waiver limits continue to increase, and buprenorphine office-based opioid treatment prescribing has been allowed for nearly two decades, the barriers to this treatment expansion remain relatively unknown. Parameters for this literature review were established to identify and describe the medical community's view and treatment of OUDs with buprenorphine in office-based settings (e.g., primary health clinics). Additionally, studies evaluating patient perspectives were evaluated as a way of maintaining a well-rounded, holistic approach to the issue of barriers and expansion. Inclusion criteria for this review were articles:

- Peer reviewed journals
- Written in English
- United States population focus
- Published within the past five years
- Office-Based Opioid Treatment (OBOT) settings
- Buprenorphine focus
- Evaluated physician and/or patient barriers
- Evaluated physician and/or patient beliefs
- Evaluated physician and/or patient perception of benefits

5.0 Results

As demonstrated in Figure 1, the search resulted in 193 articles. Titles of these articles were reviewed and 106 were eliminated, as they did not meet inclusion criteria. Examples of excluded titles include “The Future of Opioid Agonist Therapies in Ukraine: A Qualitative Assessment of Multilevel Barriers and Ways Forward to Promote Retention in Treatment” and Is Kratom the New 'Legal High' on the Block?: The Case of an Emerging Opioid Receptor Agonist with Substance Abuse Potential”. “Acute pain management for patients receiving maintenance methadone or buprenorphine therapy”^{82,83}. This left 87 articles eligible for abstract review. Upon abstract review, 51 were excluded for not meeting the established inclusion criteria. An example of an article eliminated due to abstract criteria include “A Mixed Methods Study of HIV-related Services in Buprenorphine Treatment”⁸⁴. Upon abstract review, 36 articles were reviewed and 28 were eliminated for not meeting inclusion criteria. An example of an eliminated article include “Acute Pain Management for Patients Receiving Maintenance Methadone or Buprenorphine Therapy”⁸⁵. Research articles that met inclusion criteria for full review, description and discussion was 8. A summary of these articles and their literature characteristics is found in Table 1. Additionally, summaries of the three major themes identified within the results of this search are found in Table 2, and the number of articles discussing barriers and beliefs is found in Table 3.

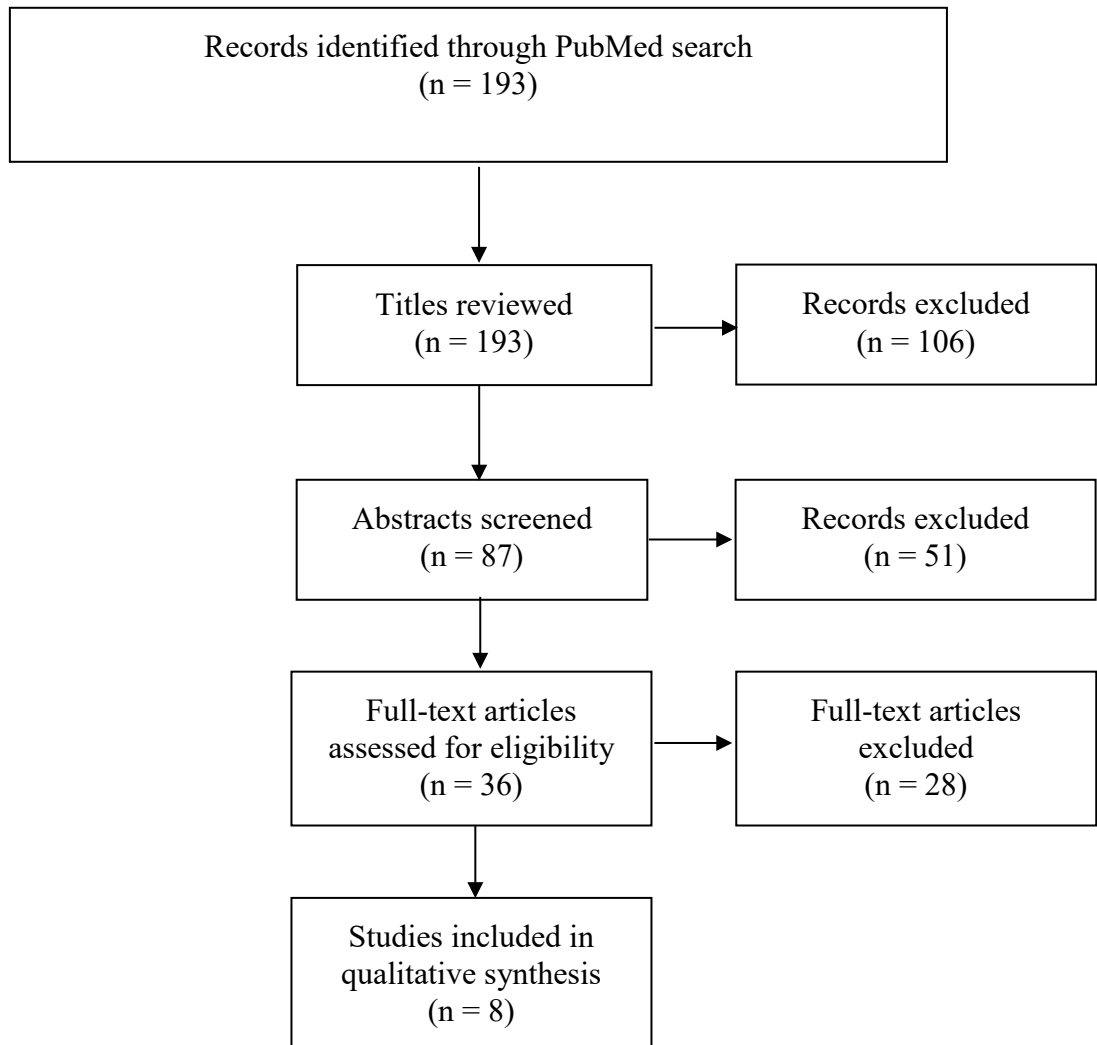


Figure 1 - PRISMA search results.

Table 1 - A summary of the literature characteristics for the eight articles meeting the inclusion criteria within the current review.

Citation	Design Study Period	Population Sample Size	Outcomes Studied
Andraka-Christou & Capone, 2017⁸⁶	Qualitative (Interviews) January 2016 – May 2017	Licensed physicians practicing in Indiana, Florida, Wisconsin and Illinois. 20 participants	Office-based treatment of opioid use disorders with buprenorphine or extended-release naloxone, as it related to personal, structural and governmental barriers.
Andrilla, Moore, & Patterson, 2018⁸⁷	Qualitative (Interviews) December 2017 – April 2018	Rural physicians with a buprenorphine waiver and high patient counts 43 participants	The process by which participants were able to overcome personal, institutional and governmental barriers to prescribing buprenorphine in office-based settings.
DeFlavio, Rolin, Nordstrom & Kazal, 2015⁸⁸	Mixed-Methods (Survey) September 2012 – March 2013	Family physicians in Vermont or New Hampshire 108 participants	Participant perception of personal and patient barriers to the adoption buprenorphine treatment for OUD in office-based settings
Fox, Masyukova & Cunningham, 2016⁸⁹	Qualitative (Focus Groups) August, 2014	Current or former buprenorphine clients at a Bronx, NY Federally Qualified Health Center. 33 Participants	Participants experience with primary care based buprenorphine treatment, psychosocial support, and differences between group and individual treatment encounters.
Huhn & Dunn, 2017⁹⁰	Mixed-Methods (Survey) April – May, 2016	Physicians practicing within the United States 558 Participants	Practice location, medical specialty, waiver status, number of patients on buprenorphine, requests for OUD treatment, and willingness to prescribe and desired resources.
Hutchinson, Catlin, Andrilla,	Mixed-Methods (Interview)	Physicians who participated in a Rural Opioid	Demographics, practice location and characteristics, and perceived barriers

Table 1 Continued

Baldwin & Rosenblatt, 2014 ⁹¹	June, 2012	Addiction Management Project training 92 Participants	to buprenorphine treatment implementation.
Tesema et al., 2018 ⁹²	Mixed-Methods (Survey) February – April, 2013	Residency program directors of family, internal or psychiatric medicine. 476 Participants	Integration of training in office-based opioid treatment (OBOT), beliefs about OBOT, and barriers to implementing OBOT training within residency program curriculum.
Tong, Hochheimer, Peterson & Krist, 2018 ⁹³	Cross-sectional 2016	Family physicians who completed residency in 2013 1,979 Participants	Association of residency, practice characteristics and physician type with preparation for prescribing buprenorphine and number of physicians currently prescribing buprenorphine.

5.1 Barriers

Physician barriers to buprenorphine office-based opioid treatment were identified and discussed by seven of the eight studies found within this literature review. Studies show a lack of institutional or office support, concerns about time requirements for patient appointments and details required for federal documentation, issues with financial reimbursement, and misconceptions about medication assisted treatment as a viable and effective treatment option^{86-88,90-93}. Additionally, inflexibility and mandated or formalized treatment options were shown to be a barrier for treatment from the patient perspective in the eighth paper⁸⁹.

5.1.1 Andraka-Christou et al.

Semi-structured, in-depth, individual interviews were conducted with twenty licensed physicians in person or by phone. The purpose of these interviews was to identify barriers to OBOT, potential ways to minimize or address these barriers through policy change. Participating physicians were interviewed on their education, attitudes towards OBOT, perceived barriers and facilitators to OBOT, and potential policy changes to increase OBOT. Physicians interviewed were from Indiana (n= 16), Florida (n= 2), Wisconsin (n= 1), and Illinois (n=1)⁸⁶. Of those physicians, 95% were white, 40% were female, and 90% practiced in an office-based setting. Twelve of the twenty participants had obtained a buprenorphine waiver and had experience prescribing it to treat OUD. The authors used a thematic analysis approach and Dedoose software to code and analyze the results. Their analysis identified numerous barriers to prescribing OUD treatment in office-based settings, including:

- Regulations for obtaining a waiver
- Federal oversight and potential audit targeting
- Patient limits and extra documentation requirements
- Lack of training in substance use disorder treatment
- Insurance or financial reimbursement barriers
- Misunderstandings about pharmacological treatment for OUD
- Fears of medication diversion or illegal activity occurring within the practice setting
- Stigma about addiction and becoming a treatment provider for OUD⁸⁶.

5.1.2 Andrilla et al.

Qualitative telephone interviews were conducted with 43 rural physicians who had obtained a federal waiver to prescribe buprenorphine in office-based settings and were providing office-based opioid treatment. Participating physicians were found through the 2016 Rural Health Research Center (RHRC) survey. Investigators followed a semi-structured interview guide that was based on the physician's responses to the RHRC survey. The purpose of this study was to evaluate the process and means by which participants overcame barriers to OBOT treatment. The mean age of the participants was 55.6 years, 25.6% were female, and only 9.3% of them were waived to prescribe up to 100 buprenorphine patients. Regions of participant practice were 23% Northeast, 20.9% Midwest, and 27.9% West and South. Results showed that participants felt great barriers exist for physicians, creating major deterrents to becoming waived and prescribing buprenorphine. Primary barriers identified by physicians were:

- Amount of time required per visit
- Remuneration rates
- Extra paperwork and federal regulations
- Financial viability of OBOT
- Becoming overwhelmed by the change to one's practice
- Medication misuse or diversion
- Lack of support, referral resources, or mentoring options⁸⁷.

5.1.3 DeFlavio et al.

Anonymous qualitative and quantitative surveys were conducted with 108 family physicians practicing in Vermont (n= 45) or New Hampshire (n=63) to evaluate barriers to integrating buprenorphine therapy within office-based family physician practices. The questionnaire developed for this study followed the principals of rigorous survey design by reviewing literature, drafting a survey based upon their review, and piloting it to establish validity. A twenty-statement survey, utilizing a five-point Likert scale, was conducted on the domains of buprenorphine OBOT adoption, opinions of addiction, and opioid treatment options. Physicians perception of patient factors and logistical concerns were also assessed. There was an even representation of self-identified female (n=54) and male participants (n=54), and over 50% of practitioners had been out of school for more than 15 years. Of the sample, only 10% prescribed buprenorphine, though 80% reported regularly seeing patients physically dependent on opiates and 73% report feeling a personal responsibility to treat addictions. A large majority of the physicians (94%) believed that treating individuals with OUD was difficult. Only 25% reported confidence in treating OUD, and 28% reported confidence in treating potential comorbidities. Logistical barriers such as untrained staff (88%), lack of time (80%), minimal office space (49%) and intensive OBOT regulations (37%). Reimbursement was another barrier, with nearly half of the physicians stating there should be a special rate for buprenorphine OBOT. The open-ended section of the survey, of which 75% of physicians participated, showed barriers for them and their staff in terms of things lacking: time for, interest in, and knowledge of OUD and OBOT. Of this qualitative section, time was the most noted barrier. A barrier of mistrust was also noted in the qualitative section, stating a general mistrust of patients with OUD, as well as buprenorphine OBOT.

Additionally, physicians saw patients with OUD as “difficult”, “stressful”, “challenging” and “high-maintenance.”

5.1.4 Fox et al.

Five focus groups were held with 33 adult patients with experience in receiving office-based buprenorphine care from a Federally Qualified Health Center (FQHC) in Bronx, NY. The purpose of this study was to identify patients’ experiences with buprenorphine OBOT and their preferences in psychosocial supports and other factors. This clinic serves a primarily low-income population that is 57% Hispanic and 39% Black. Patient participants state that, overall, buprenorphine OBOT assisted them in achieving their treatment goals. They appreciated the flexibility, privacy and accountability available within buprenorphine OBOT. Participating patients in this study identified barriers to care within their provider/patient relationships. Patient barriers for this treatment include:

- Physician inflexibility in decision making
- Fear of being discharged from the treatment program for illicit drug use
- Judgmental and stigmatizing interactions with providers
- Forced participation in specific treatment (e.g., group counseling)
- Treatment that was not individualized
- Treatment that was not private or confidential
- Not feeling safe to process and self-disclose
- Non collaborative or cooperative care models⁸⁹.

5.1.5 Huhn et al.

Anonymous mixed-method surveys were conducted with 558 physicians, with or without a waiver, from rural (18.3%), suburban (40%) and urban (41.8) locations across the Northeast (24.7%), Midwest (19.5%), South (36.7%) and Western (18.8) parts of the United States. The purpose of this survey was to assess and evaluate perceived barriers to federal waiver and actual prescribing of buprenorphine for OUD. Results of this study showed that primary barriers to waiver and prescribing were time constraints (19.2%) and lack of knowledge about the waiver process (14%). Of the participants not waived to prescribe buprenorphine, over 33% of them reported no willingness to prescribe it, and they indicated that no additional resources or would change their perceived willingness for OUD treatment. Of waived prescribers, 56.2% (n= 272) were not prescribing to patient capacity, and of those respondents, 54.8% indicated they were unwilling to increase their current patient amount. The authors noted that physicians not prescribing to waiver capacity was associated with rejecting patients interested in buprenorphine treatment, perceived time constraints, lack of information about proper buprenorphine induction procedures, and the conviction that reimbursement rates for OUD treatment was inadequate. Regardless of waiver status, lack of knowledge and an unwillingness to change practice and prescribing habits showed to be a statistically significant barrier to buprenorphine treatment access. Barriers to buprenorphine OBOT identified in this article are:

- Time constraints
- Lack of knowledge about waiver process
- Lack of willingness to prescribe
- Lack of willingness to change their stance

- Not prescribing at capacity
- Rejection of interested patients
- Lack of information on buprenorphine induction
- Concerns about remuneration rates⁹⁰

5.1.6 Hutchinson et al.

Interviews on barriers to buprenorphine treatment were conducted with 78 primary care physicians who had recently completed a training program through the Washington State's Rural Opioid Addiction Management Project. Participants in the study were 40% female with a mean age of 52.1, practicing in primarily urban counties (69%). Physicians were surveyed on demographic information, the features of their medical practice, and their perception of barriers to buprenorphine OBOT. Physicians who were not currently prescribing buprenorphine OBOT reported a lack of organizational support. The most frequently cited barrier was lack of mental health support (64%), time constraints (54%) and lack of support from a substance use disorder specialist (45%) and lack of confidence in their ability to treat patients with OUD (41%). Most interesting was 42% of physicians reporting opposition from a colleague within their practice, as well as a wider lack of agency or institutional support (36%). Only 28% reported remuneration as a barrier to buprenorphine OBOT.

5.1.7 Tesema et al.

The purpose of this study was to assess physician residency programs and their provision of OBOT training within their training. Relevant literature was reviewed, and interviews were

conducted with primary care and other office-based physicians to ensure proper study domains. Semistructured interviews were conducted on 10 physicians to gain feedback and assess face validity. The final 13-item survey was conducted with 476 program directors of accredited United States internal, family and psychiatric medicine residency programs. The survey was designed to assess curriculum standards surrounding OUD and OBOT, number of hours devoted to OBOT training, the frequency of residents treating OBOT within the respective programs, if programs encourage or require residents to obtain a buprenorphine waiver, and potential barriers to receiving or implementing such training. Additionally, beliefs surrounding OBOT, the association of the program directors' beliefs to OBOT curriculum availability were evaluated. The directors surveyed oversaw residency programs that were primarily in urban settings (85.9%) within the Western (17.7%), Southern (30.3%), Midwest (25.4%) and Northeast (26.6%) regions. Over 75% of residential directors report that residents manage patients with OUD, but less than 25% of them report their residency programs having over 12 hours of dedicated training to OBOT. The most frequently reported barriers to the incorporation of OBOT curriculum within resident training programs include:

- Perception of a limited resource of waived preceptors (76.9%),
- More important education priorities within the curriculum (64.1%)
- Limited mental health supports (54%)
- Negative beliefs about patients with OUD held by preceptors (over 20%)
- Negative beliefs about patients with OUD held by residents (nearly 30%)⁹².

5.1.8 Tong, et al.

Tong, et al. used a cross-sectional study design to analyze the data collected within the 2016 National Family Medicine Graduate Survey, completed by physicians who completed residency in 2013. The purpose of this study was to evaluate whether their residency program effectively prepared physicians for buprenorphine OBOT and if buprenorphine waived prescribing was part of their current practice. Additionally, the authors looked to establish associations between personal, residency program, and medical practice characteristics. Of the 1,979 surveys evaluated within this study, 10% (n = 198) reported receiving adequate buprenorphine training within their program, and only 7% (n=138) reported offering buprenorphine treatment within their office-based medical practice. Of the physicians who prescribe buprenorphine OBOT, less than half (n=63) report feeling prepared by their residency program to do so. The survey further demonstrated that over two-thirds of individuals trained in prescribing buprenorphine for OUD are not doing so. The results of this study show that residency training is a significant barrier associated to the limited delivery of buprenorphine as an office-based treatment option⁹³.

5.2 Beliefs

Personal beliefs surrounding individuals with an opioid use disorder, opioid agonist-based medication assisted treatment, and one's ability to effectively implement and provide care has a significant impact on availability of OBOT. Results from this literature review show that a general bias against individuals with an opioid use disorder is pervasive within the medical community.

Physicians responsible for the training and direction of medical residents may communicate their beliefs and prejudices against persons with OUD. Furthermore, personal beliefs may play a role in how OUD is treated and discussed within educational curricula, reflected in individual or communal office-based practice settings.

5.2.1 Andraka-Christou et al.

Within this study, a general belief held by providers was that they felt personally ill equipped to treat OUD as an office-based practitioner, without models or mentors for how to engage patients in questions surrounding substance use. Participants attributed this to the lack of extensive or formalized training, with most of the programs only offering addiction medicine training as an elective. They further noted that rotations within such departments was also limited. Authors reported the second most common belief was that individuals with an opioid use disorder were “difficult.” Participants feared individuals might bring illegal activity within the practice, might use buprenorphine as “just another drug,” and the more stringent government oversight, not worth the extra time and steps required with patients, and additional documentation was not worth it. These beliefs encourage practitioners from attaining and utilizing a buprenorphine waiver, ignoring OUD symptomology within their patients. The belief that staff was limited in their ability or desire to engage with OUD clients, and that one might be labeled as the community “addiction treatment provider” and subsequently stigmatized for it was also noted⁸⁶.

5.2.2 Andrilla et al.

Authors of this study evaluated practitioners who had effectively implemented buprenorphine treatment within rural medical practices. Several facilitators of OBOT were noted. The Physicians' surveyed within this study held positive beliefs surrounding OUD and medication assisted treatment, though it is noted that does not readily exists within the medical community. The physicians within this study note this poses a threat to providers becoming waived and offering buprenorphine treatment, and that it is necessary and important to find and implement solutions to combat these barriers. In discussing their encouragement to other providers to prescribe buprenorphine, recognizing their part in contributing to the opioid epidemic through overprescribing, and their subsequent need to be part of the solution, one participant stated, "I tell them you must, you must. You did it, I did it, we all did it, we are all in this together, and now we need to help fix it." Participants noted their belief that mentoring is important and readily available in a variety of formats (e.g., digital, phone and in-person). They also indicated that, in general, creating boundaries and accountability with patients is important for both parties, and prevents many of the fears surrounding office-based opioid treatment from occurring. They note that well-established models for implementation exist, and that having honest conversations with colleagues, administrators and other staff members can dispel institutional fear. Additionally, such conversations will help humanize clients with OUD, creating an open, collaborative, and positive treatment environment everyone involved⁸⁷.

5.2.3 DeFlavio et al.

Within the open-ended response portion of this study, all respondents noted that working with individuals with OUD was challenging. Physicians believed that individuals with OUD were not trustworthy and had strong concerns about working with individuals who have histories of substance misuse. Respondents noted not wanting to “deal with addicts who lie,” while another spoke of their office not operating “as a police agency.” Physicians noted their own personal beliefs and biases as a deterrent from offering buprenorphine within their office-based practices as clients are “high-maintenance,” “stressful,” “challenging,” and “trading one addiction for another.” Additionally, physicians questioned buprenorphine as a long-term maintenance treatment. The belief that one was not capable of meeting the needs of OUD clients and successfully addressing potential comorbidities was common. However, the most commonly cited belief was that their staff was ill-equipped to work with individuals with OUD, and that nobody in the office had sufficient time to administer and regulate buprenorphine treatment. Interestingly, and slightly contradictory to the results, this study shows that despite the negative beliefs surrounding OBOT and patients with OUD, family practitioners believe that because they regularly see individuals who are opioid dependent patients, and they state they have a certain responsibility to treat it⁸⁸.

5.2.4 Fox, et al.

Fox, et. Al. note that, overall, focus group patients believe that office-based buprenorphine treatment, complemented by collaborative, patient-centered care within flexible, accessible, confidential, non-judgmental environments, helped them to achieve their recovery goals. Participants believed that the relationship developed with their practitioner was instrumental in

their recovery, stressing the importance of having a safe place to share personal information without the fear of rejection or reprisal. Another participant, noting their belief in the importance of honesty within the client/provider relationship, stated, “I gotta be open with my doctor just like she’s gotta be open with me. We gotta be 50-50 on the same page, you know.” Participants further shared their beliefs that providers need to be comfortable discussing a wide range of topics, as well as the importance of shared decision making with treatment plans and buprenorphine dosing. “If you don’t have that personal communication with your doctor, it’s not gonna work no matter what they’re giving you.” Some participants noted their belief that counseling requirements within buprenorphine treatment should be self-selected, and that group therapy was not helpful for everyone. Additionally, inclusive, comprehensive, team-based care was important. As one participant said, “Everybody has to work together – the pharmacist, the therapist, the doctor – everybody has to work together trying to find me treatment, and alleviate the problem that you’re having.”

5.2.5 Tesema et al.

This study found that most residency directors surveyed (88.1%) believe that office based opioid treatment (OBOT) is an important option for OUD, that the current number of OBOT providers is insufficient for meeting community needs (75.3%), and that an increase in OBOT training within residency programs would increase the provision of such services within the community (73.7%). However, only 36.5% believe that OBOT should be a mandatory part of the curriculum. Interestingly, of the program directors who had favorable views of buprenorphine and OBOT, there were significant odds of those same directors encouraging or requiring residents to get a waiver or offering twelve or more hours of training in OBOT. One out of five respondents

reported they believe pessimistic views and attitudes towards individuals with OUD exists with clinic preceptors and resident doctors, and that these views hinder the adoption of OBOT curriculum and eventual office-based practice⁹².

5.3 Benefits

Treatment options within the United States remain limited, despite buprenorphine's validated effectiveness and FDA approval for office-based settings since the early 2000's. Research on barriers to implementation remain limited, and qualitative data on the personal benefits that patients and physicians receive from incorporating this treatment is even more restrained. Two studies included in this review focus on the qualitative experience of patients and providers, highlighting the personal benefits of receiving and providing buprenorphine treatment in office-based settings.

5.3.1 Andrilla et al.

Participants within this study noted the rewarding components of offering buprenorphine treatment within their office-based practices. One physician said, "It is the most satisfying, personally nourishing medical activity I've done in my practice lifetime," and another stated, "This is by far the most rewarding area of medicine I have ever practiced in." Beyond personal satisfaction for providing treatment, physicians shared the happiness and fulfillment they got to witness within the lives of their patients, their families, and the wider community they practice in. "No one gets excited because their blood pressure is under control, or their diabetes is better, but

the addiction patient that gets better, it just has ripple effects through the whole community. It keeps families together, moms and children and grandparents are much happier, so it's much more rewarding in a lot of ways than routine family care." Another physician shared that their biggest success stories are when families are able to come back together and heal as a result of buprenorphine treatment. "They're the best stories of all I have to say. And they're worth it." Importantly, physicians shared the benefit of having a role in addressing the opioid epidemic – an epidemic they are often and easily blamed for. As one participant stated, "I am really proud to be part of the solution⁸⁷."

5.3.2 Fox et al.

Patients within this focus group-based study freely shared the benefits of receiving buprenorphine treatment for OUD in an office-based setting. Participants noted the comfort and acceptance they received within their care, and the psychosocial benefits of receiving it from their primary care provider. When discussing the benefits freely sharing the difficulties of with a non-judgmental provider, one participant stated, "You put it out there, you get it off your chest, it just makes you a better person." This kind of relationship fosters honesty and accountability in OUD treatment, another benefit shared by the participants. "I gotta be open with everything. I can't hide, I can't even sugarcoat it or... imma go out there and get high." Another participant noted, "I could talk to her about anything that I'm going through. And she understands." This benefit was something perceived and received within an office-based setting, and many found a benefit of receiving it in a collaborative care environment. "With my doctor, there's another counselor there and he asks me how I'm doing in the week. Do I have any problems...He works side to side, when I go to see the doctor for my [buprenorphine], I'm still getting counseling. So it's a little bit of

everything.” The greatest benefit within the lives of these participants attributed to caring, non-judgmental physicians who used shared-decision making to create individualized treatment plans within a patient-centered model of care⁸⁹.

Table 2 - A summary of the findings surrounding barriers to, internalized beliefs about, and personal benefits of buprenorphine office-based opioid treatment implementation.

Citation	Barriers	Beliefs	Benefits
Andraka-Christou & Capone, 2017⁸⁶	<ul style="list-style-type: none"> • Federal Regulations for obtaining a waiver • Federal oversight and audit targeting • Patient limits • Extra documentation requirements • Lack of training in OUD treatment • Concerns about remuneration rates • Low-perceived efficacy of buprenorphine • Concerns about medication diversion • Concerns about illegal activity in the office • Stigma based perception about OUD • Concerns about being known as the community buprenorphine provider 	<ul style="list-style-type: none"> • Providers’ self-perception that they are ill-equipped to treat OUD • Individuals with OUD are “difficult” • Patients might conduct illegal activity in office settings • Using buprenorphine is just switching drugs • Federal oversight is too stringent • The extra time needed to treat patients is not beneficial • Staff is limited in their capabilities • Staff is limited in their desire to have clients with OUD • Practice will be stigmatized 	<p>N/A</p>
Andrilla, Moore, & Patterson, 2018⁸⁷	<ul style="list-style-type: none"> • Time spent with patients • Remuneration rates • Extra paperwork • Federal regulations • Financial viability • Being overwhelmed • Medication diversion • Lack of support • Lack of psychosocial supports and resources 	<ul style="list-style-type: none"> • Buprenorphine treatment is important and necessary • Offering treatment allows them to have a role in addressing the opioid epidemic • Time requirements are not too intense • They must play a role in the solution 	<ul style="list-style-type: none"> • Benefit of offering treatment that is satisfying and rewarding • Benefit of offering treatment that is fulfilling and healing for patients, families and communities • Benefit of being a part of the solution

Table 2 Continued

	<ul style="list-style-type: none"> • Lack of mentoring 	<ul style="list-style-type: none"> • Mentoring is important • Mentoring is available. • Boundaries and accountability with clients are important • Established models of care for implementation exist • Having honest and open conversations with staff is important • Collaborative models of care are important 	<ul style="list-style-type: none"> • Benefit of encouraging and guiding other providers
<p>DeFlavio, Rolin, Nordstrom & Kazal, 2015⁸⁸</p>	<ul style="list-style-type: none"> • “Difficulty” of patients with OUD • Concerns about remuneration • Lack of knowledge about OUD treatment • Lack of interest in OUD treatment • Lack of time for OUD treatment • Lack of confidence in buprenorphine treatment • Concerns about medication diversion • Concerns about staff capabilities 	<ul style="list-style-type: none"> • Individuals with OUD are not trustworthy • Biases are a deterrent from prescribing buprenorphine • Clients are “stressful,” “challenging,” and “high-maintenance.” • Clients are “trading” addictions • Buprenorphine is not effective long-term • Not capable in meeting the needs of clients with OUD • Cannot address any comorbidities • Staff is not equipped for implementation • There is not enough time to treat individuals with OUD 	<p>N/A</p>

Table 2 Continued

<p>Fox, Masyukova & Cunningham, 2016⁸⁹</p>	<ul style="list-style-type: none"> • Inflexibility of physicians • Non-individualized treatment • Non-shared decision making • Forced participation in treatment elements • Fear of being discharged for illicit use • Judgement or stigmatization from providers • Non-private or confidential care • Non-collaborative care models 	<ul style="list-style-type: none"> • Practitioners were safe and non-judgmental • Honesty is important from patient and provider • Collaboration and communication are important • Independence with one's treatment is important • Team-based models of care work effective • Personal election of counseling supports 	<ul style="list-style-type: none"> • Benefit of being met by provider without judgement. • Benefit of receiving OUD and medical care together • Benefit of honesty and accountability • Benefit of having collaborative care • Benefit of shared decision making • Benefit of individualized care • Benefit of patient-centered care
<p>Huhn & Dunn, 2017⁹⁰</p>	<ul style="list-style-type: none"> • Time constraints • Lack of knowledge about waiver process • Lack of willingness to prescribe • Lack of willingness to change their stance • Not prescribing at capacity • Rejection of interested patients • Lack of information on buprenorphine induction • Concerns about remuneration rates 	<p>N/A</p>	<p>N/A</p>
<p>Hutchinson, Catlin, Andrilla, Baldwin & Rosenblatt, 2014⁹¹</p>	<ul style="list-style-type: none"> • Lack of knowledge about mental health resources • Lack of access to mental health resources • Time constraints • Lack of backup from an OUD specialist • Resistance from colleagues 	<p>N/A</p>	<p>N/A</p>

Table 2 Continued

	<ul style="list-style-type: none"> • Lack of institutional support • Limited confidence in ability to treat OUD • Remuneration concerns • No perceived need for buprenorphine treatment 		
Tesema et al., 2018⁹²	<ul style="list-style-type: none"> • Limited buprenorphine waived preceptors • More important education priorities • Limited mental health supports and resources • Negative beliefs about OUD held by clinic preceptors • Negative beliefs about OUD held by residents 	<ul style="list-style-type: none"> • OBOT is an important option • Current number of providers is insufficient • Increasing OBOT training in residency would help increase number of waived physicians • Pessimistic views of individuals with OUD hinders training and practice 	N/A
Tong, Hochheimer, Peterson & Krist, 2018⁹³	<ul style="list-style-type: none"> • Lack of residency training in OUD treatment 	N/A	N/A

Table 3 - Barriers to and personal beliefs about OBOT identified in two or more articles.

# of Articles	Barriers
5	<ul style="list-style-type: none"> • Remuneration Rates^{86-88,90,91} • Concerns about time^{86-88,90,91}
4	<ul style="list-style-type: none"> • Negative or stigmatizing views of individuals with OUD^{86,88,89,92}
3	<ul style="list-style-type: none"> • Concerns about buprenorphine diversion⁸⁶⁻⁸⁸ • Lack of knowledge about psychosocial supports and resources^{87,91,92} • Lack of training in OUD and OBOT^{86,90,93} • Lack of mentoring for OBOT^{87,91,92}
2	<ul style="list-style-type: none"> • Lack of training in OUD^{86,93} • Federal oversight and regulations^{86,87} • Extra documentation requirements^{86,87} • Lack of interest in buprenorphine OBOT^{88,90} • Concerns about the efficacy of Buprenorphine^{86,88} • Lack of staff, colleague or institutional support^{87,91}
# of Articles	Negative Beliefs
2	<ul style="list-style-type: none"> • Individuals with OUD are “difficult” or “challenging”^{86,88} • Staff is limited in desire and capability to implement OBOT^{86,88} • Providers believe they are ill-equipped to provide OBOT^{86,88}
# of Articles	Positive Beliefs
2	<ul style="list-style-type: none"> • Buprenorphine OBOT is an important and necessary option^{87,92} • Collaborative care models are good and important^{87,89} • Honesty and accountability are important for patients and providers^{87,89}

6.0 Discussion

6.1 Summary of Findings

Buprenorphine treatment integration within office-based medical settings remains limited, despite over a decade of federal approval^{5,94}. This literature review summarizes previous studies, showing that significant personal and institutional barriers still exist against the provision of this within this validated pharmacological intervention in office-based settings^{75,78-80}. Primary barriers for physicians identified in this review include: limited training in office-based opioid treatment within physician residency curricula; concerns about remuneration for buprenorphine services; perception that MAT is not needed within one's current patient population; limited knowledge of mental health services within the local community; no behavioral health services available within their particular practice; apprehensions about medication diversion; conflicting feelings surrounding agonist therapy (e.g., switching addictions); stigma surrounding individuals with OUD and their illicit use of substances (e.g., "difficult" patients); a staunch resistance to change, regardless of education or resources available; time constraints; reservations about staff capabilities; lack of institutional or collegial support. However, this literature review also shows that overcoming such barriers and beliefs is possible, and the results of such enterprises are rewarding for practitioners and their patients.

6.2 Discussion of Findings

Opioid Use Disorder is a chronic medical condition of epic proportions within the United States. Persons with untreated OUD have poorer quality of life and physical well-being compared to the general population and individuals with other chronic illnesses²². Significant stigma surrounds these individuals, further complicating their health and social functioning, and increasing the alarming overdose death rates^{1,23}. Tens of thousands of lives have been lost to OUD and billions of dollars are spent each year due to healthcare costs, lost work, and criminal justice expenses².

Buprenorphine-based opioid agonist therapy is a viable and effective treatment option, approved for use within office-based medical settings; the first agonist therapy available within non-OUD specific treatment settings since 1914⁷². This approval of buprenorphine for OBOT expands the availability of opioid agonist therapy beyond the scope of methadone and other specialized clinics, especially in rural settings. The use of buprenorphine medication counteracts the problematic, clinically significant impairment and distress often experienced by individuals who engage in illicit opioid use. Buprenorphine treatment prevents cravings, reduces the risks of HIV and Hepatitis C contraction, and allows for neurological brain structure stabilization and repair.

The overt reliance on, and referral to, abstinence-focused community supports from medical and behavioral health personal is a glaring failure of the medical system to adapt and effectively meet the needs of individuals seeking recovery. Relapse is a natural part of recovery in chronic illness, and OUD is no exception. The binary stance of abstinence-based recovery sets an unobtainable ideal of perfection. Perpetuating this ideal within healthcare settings sets vulnerable

individuals with an OUD up for failure, stigmatization, and isolation, which further prevents them from seeking or accessing the resources they need.

Due to the chronic nature of OUD and its similarities to other chronic illnesses, the medical community has an overwhelming responsibility to address it in a unique and comprehensive way. Despite the opioid epidemic and current public health emergency occurring within the United States, few articles addressing this issue resulted within this search. This lack of literature points to a major gap in research, educational activities, financial resource investment, and the continued lack of government intervention. In order to broaden understanding of OUD treatment among medical and public health professionals, future studies should focus on buprenorphine OBOT implementation in rural versus urban settings, community partnerships and collaboration, effects and benefits of established mentoring models, best practices for supportive counseling services, and the long-term impact of buprenorphine on patient's health and quality of life.

Significant barriers against OUD treatment, and buprenorphine OBOT in particular, still exist at institutional, educational, governmental, and provider levels. Stigma and miseducation surrounding individuals with OUD remain pervasive within the medical settings and the wider communities throughout the United States. Despite research showing that an abstinence-based approach is not effective on a population level, and that buprenorphine maintenance is beneficial front-line care, improving treatment retention and outcomes, addiction and recovery is still seen as a moral issue rather than a medical issue. This review focuses on buprenorphine OBOT specifically because of the overarching misconceptions surrounding opioid agonist treatment. The stigmatizing belief that individuals are simply "switching addictions" is a pervasive barrier for providers against offering inclusive, non-judgmental care.

At the end of 2017, there were 33,876 buprenorphine waived physicians, making up 3.7% of the waiver eligible physicians within the United States⁸⁷. Percentages of waived nurse practitioners and physician assistance amongst the eligible pool were 1.7% and 0.8% respectively⁸⁷. For those who have chosen to become waived, a majority remain below their patient threshold⁹⁰. This is interesting as one of the noted barriers was low patient interest or need for buprenorphine therapy.

Low reimbursement rates for buprenorphine therapy is an additional concern. Providers are hesitant to take unfamiliar financial risks or make sacrifices for “difficult” individuals with OUD. Concerns about the stringent documentation requirements and staff capabilities seem to be closely tied to this barrier, as physicians report time lack of time, knowledge or interest as a barrier⁸⁸. Remuneration rates vary by state and insurance providers, pointing to a need for federal policy regulation of an established billable rate for OUD treatment.

Time constraints within office-based medical practices are another barrier noted by physicians. The additional documentation requirements required by the federal government for OBOT appear to be a closely related. Additionally, counseling requirements for OBOT patients, and the noted lack knowledge or familiarity with community counseling resources seems to further this barrier against implementation. These counseling requirements for OBOT patients, while federally mandated, are not tied to a specific treatment modality (e.g., group counseling). The nebulous nature of this requirement may be a deterrent for physicians looking for specific instruction as to the type of supportive services patients need. However, it may ultimately be a benefit as this freedom in clinical support services complements individualized treatment and person-centered models of care. Ultimately, physicians have the discretion to offer or refer the

supports they and their clients deem most appropriate and beneficial. Integrated models of care and greater collaboration between physicians and mental health professionals is necessary.

Residency programs in the United States fail to educate and empower budding physicians with the tools needed to effectively address the opioid epidemic in a holistic and empathetic way, leaving individuals in need without office-based opioid treatment. Some doctors may even deny OUD symptomology within their patients. Few physicians in this review report receiving adequate OBOT training in their residency programs. Negative views of individuals who use illicit substances remain pervasive among medical residents and their preceptors. A lack of willingness or interest in engaging with persons with OUD remains strong among providers, and this is associated with a decision to stay un-waivered, regardless of available training, mentoring, or resources available for buprenorphine treatment implementation. Strict federal oversight and documentation for buprenorphine seem to only strengthen these existing barriers against obtaining a waiver, further decreasing a physician's desire or perceived ability to treat individuals with OUD.

Stories of physicians from within this literature review who have overcome the aforementioned barriers, as well as success stories of patients who received care within office-based settings, are tremendous assets to challenging and deconstructing the structural and personal biases against the provision of buprenorphine in office-based settings. Within this review the importance of honesty, accountability, boundary setting, and having treatment contracts to complement OBOT and maintain its efficacy are apparent. Many physicians may find incorporating buprenorphine treatment within an established practice daunting since it deviates from routine practices and necessitates the physician and staff to adopt new roles. Doing so will require patience on both the clinician's and clinical support staff's part to incorporate OBOT and adopt new roles.

Mentorship for new or budding OBOT physicians is also crucial. No amount of formal training can force a physician to become non-judgmental, accepting and open to free and honest self-disclosure from a patient. However, mentorship from an established OBOT physician allows the necessary knowledge and experience surrounding inclusive buprenorphine treatment into their practice to be disseminated in a more personalized and intimate way. Physicians are able to develop skills, receive consultation and learn from other physicians in a less formal atmosphere. This is a level of support and guidance that is necessarily found in a personalized and informal way. The stories of these established physicians, their successes, failures and wider learnings, provide instrumental guidance to budding or newly waived physicians looking to include this care.

6.3 Limitations

There are several limitations with this thesis. A literature search, review, and synthesis methodology were utilized. Limitations of this method are a reliance on outside literature, and the subsequent results of this thesis were further limited to one academic search engine. A more inclusive and expansive Boolean search process may increase the number of research studies that meet inclusion criteria. The research identified within this review is limited in number, demographic data, study designs, geographic scope, length of study time, use of secondary data, participant sample sizes, and has limited generalizability. However, they nonetheless assist in contextualizing a very difficult and nuanced subject, expand upon past research, and provide valuable guidance for medical and mental health professionals, as well as future research.

6.4 Implications and Recommendations

Office-based buprenorphine treatment is an important part of the continuum of recovery and care⁸⁸. Buprenorphine's unique pharmacological properties as a partial mu receptor filler with a ceiling effect, and agonist qualities against illicit opioids, is well-fit for OBOT^{4,75,95}. Successful implementation of buprenorphine OBOT has the potential to decrease mortality, limit the communication of disease, improve treatment outcomes and retention, and reduce overall healthcare costs^{77,95}. Effective training and mentoring are necessary across all geographic regions throughout the United States, in order to instill physicians with the confidence needed to overcome the barriers documented within this review.

Making changes to residency training about OUD is a critical element to ensuring inclusive educational curricula and implementation of buprenorphine OBOT. Focused symposiums within major hospital settings, open to patients, family members and medical personnel are one way of addressing the negative beliefs about persons with OUD. Working with state and national accreditation bodies to advocate for change in training duration and programmatic scope will reduce the barriers of stigma and increase physician wavering, thereby expanding OBOT provision.

The federal government has made important strides towards increasing the availability of buprenorphine and OBOT by increasing the number of patients a waived physician can assist with care, and their more recent approval of physician assistants and nurse practitioners to prescribe buprenorphine. However, these increases have done little to entice new and non-prescribing physicians to receive a waiver, nor encourage currently waived physicians to meet their patient limits. Physicians views of OUD and the effectiveness of MAT do not seem to have changed as a result of waver limit increases.

Policy makers should focus on increasing physician reimbursement rates. This literature review revealed concerns about financial viability for providers as a major barrier against buprenorphine OBOT. Rather than continuing to raise the waiver limits for physicians already prescribing, the federal government should look to increase remuneration as a way of enticing physicians not already practicing OBOT, thereby expanding the scope treatment availability. Increased rates for billing, coupled with expanded treatment and mentoring options, have the power to reduce multiple barriers simultaneously. This would also help ensure that providers who become waived will continue to prescribe to waiver capacity without financial concern.

Information regarding available resources for training and mentoring needs to be more widely circulated among physicians, such as through the Substance Abuse and Mental Health Services Administration's Provider Clinical Support System⁹⁶. According to their website, "PCSS provides evidence-based training and resources to give healthcare providers the skills and knowledge they need to treat patients with OUD."⁹⁷ This online platform connects trusted and established buprenorphine providers and addiction experts with newly waived physicians, as well as individuals seeking support for successful buprenorphine implementation. It also offers webinars, group discussion and collaboration. Although free and easily accessed, this largely unadvertised resource remains underutilized and widely unknown among office-based physicians.

Established and effective models of care for buprenorphine implementation and staff support need to be utilized, such as the Hub and Spoke Model pioneered in Vermont⁸⁷. This model for networking and supporting treatment providers establishes a "hub" within an urban setting (e.g., hospital) that supports various outlying community resources, or "spokes." Project ECHO out of New Mexico is another model that also holds promise. This digital platform links rural

primary health care physicians with urban hospital systems, offering practice support and individual case assistance⁹⁸.

More concerted efforts need to be made by public health professionals, policy makers, and community leaders, to research, evaluate and freely disseminate these effective models of care. Prioritizing buprenorphine treatment best practices will aid in reducing structural barriers and empower physicians in preventing and managing issues that may arise in the process of necessary office-based buprenorphine treatment implementation.

Negative and marginalizing views of individuals with an OUD need to be addressed in inclusive and humanizing ways. This literature review demonstrates that some physicians continue to view patients as “difficult,” “high-maintenance,” “challenging,” and “stressful”^{86,88}. Opioid Use Disorder is a chronic illness that remains largely viewed as a moral issue. Within this perception, persons suffering from OUD are frequently ignored or denied treatment because of something they “chose.” Long-term use of antidepressants to treat depression or anxiety is common within the medical field, yet the long-term use of opioid agonist medication to treat OUD is frequently viewed as inappropriate. This disconnect in treatment underscores the incongruity of how opioid based drugs are administered and individuals with OUD are treated in medical care settings.

Language is an important tool in addressing stigma. Terms commonly used within the field of OUD treatment are loaded with connotations of laziness, weakness, poverty, or immorality. This review showed that individuals with OUD are still viewed and talked about in this way. Suggested change to language includes switching “addict” to “individual with a substance use disorder,” “sober” for “long-term recovery,” and “medication assisted treatment” for “medical treatment.” Seemingly simple changes to the language medical providers and public health professionals regularly use can have uncharacteristically positive results.

Powerful stories of experienced physicians who have overcome the personal and structural barriers against buprenorphine OBT paint a potent and deeply humanizing picture of OUD treatment. Most notably, they describe the life-saving effects of buprenorphine within the lives of patients, their families and the wider community. Traditionally, the burden of sharing stories of success and long-term recovery has been on patients' shoulders. However, providers have an equal duty to share their experiences of success and the fruits of treatment and recovery.

Through a free and widespread sharing of such stories, a greater investment in education about OUD, increases in mentoring and other supportive resources, and an increase of reimbursement rates, we will begin to see a reduction in overdose deaths. Perhaps then more physicians will proudly proclaim that implementing buprenorphine treatment into their offices is “the most satisfying, personally nourishing medical activity I’ve done in my practice lifetime”⁸⁷.

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