Medication-Assisted Treatment in Criminal Justice Systems: A Qualitative Study on Treatment Orientation, Barriers, and Facilitators of Allegheny County Jail

by

Jose E. Silva Jr.

BS, Franciscan University of Steubenville, 2011

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This thesis was presented

by

Jose E. Silva Jr.

It was defended on

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and approved by

Thesis Director:
Mary E. Hawk, DrPH, Associate Professor
Behavioral and Community Health Sciences
Graduate School of Public Health
University of Pittsburgh

Committee Member:
Elizabeth Felter, DrPH, Assistant Professor
Behavioral and Community Health Sciences
Graduate School of Public Health
University of Pittsburgh

Committee Member:
Christina E. Newhill, PhD, Professor
School of Social Work
University of Pittsburgh

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Jose E. Silva Jr., MPH

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Abstract

Background: Justice-involved populations have high rates of opioid dependency and are at most risk for overdose events, especially in the immediate post-release period. Excessive mortality rates are largely attributed to these overdose events. Medication-assisted treatment (MAT) has been underutilized in the treatment of opiate-dependent criminal justice populations. Consequently, health care policies within this sector often fail to provide evidence-based treatment that may hinder or disrupt the rehabilitation of detained offenders.

Purpose: Opioid-related fatal overdoses are a significant public health concern in Allegheny County, Pennsylvania, especially among justice-involved populations reentering into society. Despite the effectiveness of pharmacological intervention, Allegheny County Jail has limited the provision of MAT to expectant mothers. Understanding local jail policy and its implications on the general rehabilitation of its returning citizens in the community is important for addressing barriers to efficacious treatment, facilitating effective service utilization, and informing policy.

Methods: To understand Allegheny County Jail's barriers to facilitating MAT and its related treatment implications on the greater community, we examined the perceptions, experiences, and knowledge of 15 stakeholders. Semistructured interviews and a survey were used to gather qualitative data from a convenience sample of respondents. A qualitative matrix analysis was then developed to organize categorical constructs from responses across different groups of stakeholders.

Results: These findings have a great public health significance as they show how Allegheny County can target and mitigate treatment gaps associated with the detoxification of an individual in active community recovery. Methadone and buprenorphine should be provided to prevent lapses in treatment as well as timely linkage to community-based providers during incarceration. Many expressed views consistent with stigmatized beliefs about methadone and buprenorphine, and cited the jail administration's punitive approach to substance abuse treatment. Other major factors included the difficulty in treating a transient jail population, associated cost of medication, and security concerns with administration and management of a controlled substance. These factors were found to negatively impact the provision and continuity of MAT practice in Allegheny County. Public health interventions will require criminal justice systems alike to reform policy that improves health outcomes of opiate-dependent offenders and reduces their involvement in the criminal justice system.

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Preface

This research endeavor would not have been possible without the assistance and support of Dr. Hawk, Dr. Felter, and Dr. Newhill. Their exemplary leadership, kind words of affirmation, and encouragement during times of uncertainty tremendously impacted my work. Sometimes, it just takes one person, one chance, or one supportive comment to thrust an individual forward and instill belief in that person. I can only hope to emulate the work you all have invested in your community and make as much as a positive difference. Your examples will not soon be forgotten.

1.0 Introduction

Since the introduction of the opioid analgesic OxyContin in 1995, the rate of prescription and non-prescription opioid misuse and its associated health implications, including overdose, has progressively increased in the U.S. [1]. In tandem with this epidemic, an unprecedented number of people who use drugs, predominantly those eliciting opioid-dependent symptoms, have steadily increased in U.S. criminal justice systems [2]. As a result, black-market opioids, heroin, and illicitly manufactured fentanyl and its analogues, have significantly contributed to the prevalence of opioid use disorders (OUD) among justice-involved populations [3]. Consequently, opioid-related overdoses are now the leading cause for unintentional injury deaths in the U.S. [4]. Several surveillance reports and research find formerly incarcerated adults, who often cycle in and out of criminal justice institutions without formal substance use treatment, as the most susceptible to mortality risk [5].

It follows that the underprovision of OUD treatment within penal institutions leads to adverse withdrawal symptoms during forced detox, a reduction in opiate tolerance, and subsequent elevated risk to overdose and mortality on release [5]. Additionally, released inmates—or returning citizens—leave uninsured, without access to health services; this is exacerbated by the high annual turnover and reincarceration rates, which are linked with increased spread of infectious diseases such as HIV risk behaviors, especially through 'needle sharing.' The combination of these associated harms and inadequate opioid misuse treatment creates a large-scale public health problem, profoundly impacting the health outcomes of returning citizens and their respective

communities [6].While psychotherapy has been commonly used to treat substance use disorders, particularly cocaine, benzodiazepine, or other acting stimulants, opioid and alcohol use disorders have the pharmacological advantage of being treated with U.S. Food and Drug Administration (FDA) approved medications, including evidence-based treatment formulations of methadone, buprenorphine, and naltrexone [7]. Collectively, these substance use disorder medications are interchangeably referred to as medication assisted treatment (MAT), opiate maintenance therapy, or pharmacotherapy [7]. Furthermore, pharmacotherapy and psychotherapy's integrative applicability has been found to enhance treatment outcomes among opiate-dependent individuals, and is recommended by the World Health Organization (WHO) and the Substance Abuse Mental Health Services Administration (SAMHSA) for both general and incarcerated populations [7]. Thus, expanding access to OUD treatment for inmates, including the provision of MAT and counseling services, advances the constitutional right for medical treatment and offers a unique public health opportunity to treat prisoners as patients [8].

In this study, opioid-related mortality rates and sociodemographic risk factors are reviewed from available surveillance reports and research conducted among criminal justice populations. Additionally, findings from the most recent literature on the efficacy of MAT implementation within criminal justice institutions, domestically and internationally, is examined. Finally, to develop a comprehensive understanding of the current state of MAT—its barriers and facilitators—within Allegheny County Jail, opioid use disorder treatment services and protocols are assessed. To further evaluate Allegheny County Jail's treatment implications, semi-structured qualitative interviews were conducted with community stakeholders who directly admit or provide some level of care or service to the formerly incarcerated, specifically returning citizens diagnosed with opioid use disorder at risk for relapse and overdose following release. By collecting this

information from key informants in Allegheny County, attitudes, barriers, and policies that may influence Allegheny County Jail's use of MAT can be further assessed and translated into recommendations for improving substance use treatment for opioid using offenders.

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2.0 Background

Since 1973, the U.S. imprisonment rate has quadrupled to where U.S. criminal justice systems now constitute nearly a quarter of the world's incarcerated population [9]. Today, the U.S. penal system continues to account for not only the largest incarceration rate in the world at just over 2.16 million [9], but the highest drug dependence and abuse rates, with National Inmate Surveys finding 63% of local jail inmates and 58% of state prisoners meeting medical criteria for substance dependence, as reported by the Bureau of Justice Statistics [2]. This is in stark contrast to the 8.4% prevalence of substance use disorder (SUD) rates among adults aged 18 or older throughout the United States [10].

Historically, substance use disorders (SUDs) were not viewed as a global health priority, especially amidst other chronic and infectious disease ailments; however, sharp increases of 41% of all of these associated burdens with mental, substance use, and neurological disorders, between 1990 and 2010, have raised significant concerns within the healthcare industry [11]. Research has indicated that individuals with SUDs have a higher prevalence of medical conditions and disease burdens compared to non-SUD individuals, particularly among opioid-dependent users. This is further exacerbated by estimates indicating that just over 12% of individuals in need of specialized SUD treatment ever receive it [12]. These conditions place this subpopulation at greater risk for poor health outcomes, including high morbidity and early mortality [13]. As a consequence, SUD treatment underutilization has led to an overrepresentation of drug-dependent individuals in not only primary care and trauma center settings [13], but criminal justice institutions [14].

From a medical perspective, this poses a daunting public health risk with prisoners bearing the disproportionate burden of carrying and contracting higher rates of infectious diseases, such as HIV, STIs, tuberculosis, and hepatitis B and C—in addition to other chronic conditions [6]. Previous studies have estimated that a significant percentage of Americans bearing the following conditions pass through correctional facilities every year: 30% with hepatitis B virus (HBV); 43% with hepatitis C virus (HCV); and 40% with tuberculosis (TB) [14]. The interface between HIV and injection-drug users is even more pronounced, especially when considering that about one-sixth of an estimated 1.1 million individuals living with HIV pass through the criminal justice system (CJS) annually [15]. Moreover, heroin injection alone has seen a 63% surge from 2002 to 2013 [3]. This is particularly alarming given that a significant antecedent to drug injection stems from prescription opioid abuse; studies show that 4 in 5 heroin users started by abusing prescriptions opioids [16]. This shift in drug use behavior is critical to track when considering that death rates were predominately driven by prescription opioids (e.g. OxyContin, Percocet, Vicodin) in the early 2000s; now, that rate is 6 times higher and propelled by heroin and illicit fentanyl [3]. Because justice-involved individuals are more likely to experience drug dependence, epidemics of infectious disease, substance abuse, and incarceration are inextricably intertwined [17].

Extant literature estimates that approximately 24–36% of all heroin users pass through the U.S. penal system every year, with 20% presenting injection-drug using behavior [18]. However, a recent nationwide survey found that approximately one-third of individuals with opioid use disorder and 40% of heroin users had current or previous criminal justice involvement [19]. Yet, less than 5% of individuals who were referred to opioid use disorder treatment ever received it within the criminal justice health care system [20], which represents missed opportunities to engage them in care. And while criminal justice populations have historically experienced higher

burdens of disease and been medically underserved [21], these alarming statistics come at a time where rising drug deaths have been eclipsed by opioid-related overdose rates—predominantly by the introduction of fentanyl and its analogues in the drug supply market [22]. Compounded by concentrated OUD rates, a lack of standardized SUD treatment, and subsequent elevated post-release mortality rates, criminal justice institutions have become the epicenter of best predicting opioid overdoses in the community.

In the context of community health care, correctional systems have the opportunity to serve as public health partners for a high-risk, disenfranchised population that seldom receive adequate health care services, if at all [6]. Every year, 3,283 jails will process 10.6 million admissions [23], in contrast to 1,821 state and federal prisons that recorded 606,000 admissions in 2016 [24]. Therefore, jails—more so than prisons—are uniquely positioned to provide behavioral and health intervention services to inmates that are more likely to continue contributing to the local public health burdens of a community [6]. For a majority of incarcerated Americans, encountering preventive and chronic medical care for the first time will occur within a correctional setting [25], with an estimated 40% receiving a chronic medical diagnosis during incarceration [26]. Because opioid use disorders have become more concentrated and pervasive throughout American correctional settings [27], incarceration events provide the potential for identifying and treating adults with opiate-dependent symptoms—especially for those not enrolled in community-based treatment at time of booking [28]. In light of the continuity of care, it is imperative for health policy officials to ensure inmates receive adequate substance use and linkage services—as drug relapse exceeds 85% without proper diagnosis and treatment post-release [17].

Furthermore, community reentry service providers, researchers, and policy makers emphasize the first three months following release as being the most critical time period to reintegrate the returning citizen; if successful community reintegration is not attained in this timeframe, it is most likely never to happen [29]. Unfortunately, the narrative of reincarceration follows more than 75% of all released inmates [30], with one-third returning to their drug-seeking habits within the first two months [31]. For others—specifically opioid-dependent adults—that "revolving door" comes to a halt with a fatal overdose.

2.1 Review of Post-Incarceration Overdose Mortality Risk Factors & Rates

As opioid use and misuse continues to be a pressing public health risk for vulnerable correctional populations, states and counties across the U.S. are starting to take notice of overwhelming trends identified through recent overdose surveillance reports and retrospective cohort studies. While most research in the area of health policy reform has focused on short-term physical health improvements among those incarcerated [32], emerging literature has shown that policies and practices need to shift their paradigm of substance use care among opioid-dependent offenders. Globally and domestically, the leading mortality indicator among substance abuse returning citizens is unintentional drug overdose; the most common drug class being opioids [22], especially in the immediate post-release period [33]. Risks may be explained by lapses of MAT while incarcerated, poor social support, re-exposure to drug networking environment, and a significantly decreased opioid tolerance, all of which exacerbate and contribute to the relapse and overdose cycle [33]. Among socioeconomic stressors, lack of health insurance [6], education,

income, and unemployment also have significant implications on the growing opioid crisis in the U.S. [34].

A study conducted in the Washington State Department of Corrections, found that released inmates were at a markedly higher risk for drug overdose during the first two weeks of reentry—with a risk rate of 129 times greater than non-incarcerated state residents [5]. Among all overdose cases, 80% were attributed to men who were predominantly non-Hispanic white and younger than 45 [5]; the majority of incidences involved opiates/sedatives [35]. Their average length of incarceration was around one month; however, about one-quarter of the follow-up cohort were found to have been incarcerated and released more than once [5]. Other significant risk factors for overdose mortality included a positive SUD diagnosis, history of injection-drug use, history of panic disorder, and receipt of a psychiatric prescription within 60 days prior to release [35]. Even though MAT was not provided during incarceration period, traditional SUD treatment was associated with a reduced risk for overdose death and all-cause death groups [35].

In a Philadelphia Department of Prisons study, death records were obtained and assessed from the Pennsylvania Department of Health's Bureau of Vital Records from 2010 to 2016. Fatal overdoses were most prominent in the first week following jail release, with a mortality rate of over 2,000 deaths per 100,000 person-years [36]. Of the 33%, or 837, of 2,522 cases succumbing to fatal overdose, 72% occurred within the first two weeks of release—a trend not observed among all-cause death cases. Fentanyl and heroin were found to be overwhelmingly responsible for the majority of overdose decedents [36]. Race and age were strong predictors for overdose specific death among men and women, with non-Hispanic individuals between ages of 25 and 34, experiencing a 11.23 times higher incidence of overdose than their non-incarcerated counterparts of same sociodemographic characteristics [36]. Additionally, higher case incidences of overdose

were reported among returning citizens that had been incarcerated for more than a month but less than six, with an average stay of 68 days [36]. During the period of this study, only individuals receiving community-based MAT at time of arrest were eligible to continue receiving treatment while imprisoned—a facilitator towards continuing treatment, but barrier to those in need of beginning treatment [36]. Methadone and buprenorphine is now available to all those meeting OUD criteria to start while incarcerated [36].

Among New York City jails, a study was conducted between 2011 and 2012 that identified opioid overdose as the highest cause-of-death marker following release, with 37.3% of case fatalities in this cohort occurring within the first 42 days [37]. Deaths from overdose were most common among non-Hispanic White men, accounting for nearly 97% of overdoses; the reported mean age was 41 [37]. The median incarceration period before release was 43 days for opioid-related fatal overdose cases [37]. Of all opioid-related fatality cases, 77% had reported previous histories of opioid detox and accidental overdose; however, only 50% were reported as being referred to opioid treatment programs (OTP) [37].

In the Commonwealth of Massachusetts, according to a 2011 – 2015 opioid death analysis, the opioid-related overdose death rate was found to be 120 times higher for returning citizens from prisons and jails, compared to non-incarcerated Massachusetts residents [38]. Mortality rates were also significantly higher within the first month at 200 deaths per 100 person-years [38]. Out of the near 54,000 returning citizens identified during this period, three in five were considered homeless and more than 50% were diagnosed with a serious mental illness (SMI)—of which, more than half were also living with an OUD [38]. An additional 25% of inmates ever received treatment during their incarcerated period [38]. On average, overdose decedents were in their mid-30s, White non-Hispanic men, less likely to have an education beyond high school, more likely to be single, and

working in the blue-collar industry. The analysis also identified a 12-fold increase in opioid-related deaths among returning citizens from 2011 to 2015—with nearly 50% of all overdose deaths in 2015 being attributed to the formerly incarcerated.

Central Appalachia presents its own burden of SUD, especially in distressed West Virginia counties where geographical isolation, economic underdevelopment, and health disparities [39] are most pervasive compared to the rest of country [40]. Not surprisingly, in 2017, West Virginia continued to lead the nation with the highest overdose death rates at a rate of 57.8 per 100,000 [41]. In West Virginia's most recent 2016 overdose fatality analysis, 56% of 830 overdose fatalities reflected histories of incarceration, with fentanyl contributing to the largest percentage of cases among the 35-44 age group [42]. For men incarcerated within 12 months prior to death, 28% died within first month of release; this number was 21% for females [42]. Once again, decedent demographic characteristics included individuals in the blue collar workforce, unmarried, and reflecting a poor educational background with 46% of returning citizens in this category dying within month of release [42].

In the largest study ever conducted in the U.S. across an extended follow-up period of time, 2000 – 2015, North Carolina decedent cases yielded significantly elevated mortality risk rates of 74 and 40 times greater for heroin and opioid overdose in the first two weeks post-release, compared to the general public [43]. Opioid overdose fatalities were highest for non-Hispanic White men between ages of 26 – 50, and especially prevalent among former recipients of substance abuse and mental health treatment during more than one past reincarceration term [43]. Out of the nearly 230,000 returning citizens surveyed, researchers found that approximately 70% had a substance use disorder [43]. Even though two-thirds received some form of substance use

treatment that did include MAT, the forced withdrawal policy at the prison was said to have propelled the overdose rates following release [43].

This data confirms that returning citizens with opioid use disorder are subject to an elevated risk of overdose and post-release death [44]. Mortality linkage studies matching correctional health systems with vital statistics can inform quality improvement efforts in correctional health care delivery, especially regarding disparities in substance use care [37]. These findings further suggest the need to engage law enforcement officials and criminal justice decision makers in reforming their health care delivery system and establishing policy that provides evidence-based practices that are effective in American communities [37]. By the same token, if returning citizens are to achieve upward mobility over time, continuity and coordination of substance use treatments must span across the typical termination period at release.

2.2 MAT in U.S. Criminal Justice Systems

Despite the increased level of vulnerability and adverse consequences impacting the returning citizen and their respective community, MAT continues to be underutilized in correctional institutions, such as drug courts [45], divisionary programs [20], jails [46], and prisons [18]. Even though the U.S. became the first country to initiate a methadone treatment trial within a jail setting in the late 1960s, efforts to build on existing MAT research have been slow to permeate the U.S. criminal justice system [47]. In fact, it was not until 1987 that a U.S. jail, Rikers Island Correctional Facility—one of the country's longest standing model programs for methadone treatment, the Key Extended Entry Program (KEEP)—began engaging individuals living with a heroin addiction in treatment during incarceration [28]. This was largely initiated in response to

the HIV epidemic at the time. KEEP essentially served as a transitional program for heroin-dependent offenders who were maintained on methadone and then referred to community-based treatment centers on release [28]. An 11-year analysis has since identified KEEP's treatment protocols as proactive in facilitating post-release entry into community treatment and reducing recidivism [48]. More than two decades later, in 2011, a county jail in Washington, Maryland adopted MAT for all medically-eligible incarcerated populations, including pregnant women; although still rare, other penal institutions have slowly started revisiting the notion of piloting MAT programs of their own [49]. However, few criminal justice institutions will ever screen for OUD using a validated measurement tool and even fewer have structured policy that permits MAT as a treatment option [50].

According to a collaborative 2018 report by the National Sheriffs' Association (NSA) and National Commission on Correctional Health Care (NCCHC), drug treatment programs in 20 state Department of Corrections only provided methadone maintenance to incarcerated pregnant women [49]. On a local and county jail level across the country, fewer than 200 facilities in 30 states had any provision of MAT—with the majority of programs limiting their treatment protocol to an extended-release injectable naltrexone on the day of the returning citizen's release [49]. For jails that did provide MAT to pregnant women, treatment maintenance was typically withdrawn postpartum, [49] which is not a recommended care modality [51].

Specialty courts and diversion programs also represent a missed opportunity for engaging non-violent drug offenders in evidence-based substance use treatment. As of 2018, there were 3,100 drug court-supervised treatment programs in the U.S [52], with a reported one-third of adults on probation eliciting SUD symptomology [53]. Following this trend, Matusow et al. [45] found that nonmedical use of prescription opioids was more pervasive (66%) than reported heroin use

(26%) among drug court participants. In principal, drug court programs aim to lessen recidivism by diverting drug-dependent offenders through supervised community supportive services, which is predominantly inclusive of appropriate SUD treatment. However, despite the National Association of Drug Court Professionals (NADCP) approval of MAT [54], discrepancies in drug court treatment philosophies continue to persist with the majority not recommending or allowing MAT for OUD. A national survey in 2013 reported that, among 103 drug courts in 47 states, only 47% permitted some form of agonist therapy [45]. Among drug court correspondents, 98% reported that a portion of their drug court participants were opiate-dependent [45]. Other recent studies have found that drug court clients were among the least likely of justice-involved individuals to receive or be referred to opioid agonist therapy [20]. Additionally, data collected between 2010 and 2015, from abstinent-based drug courts found that opiate-dependent drug court participants were over 80% less likely to graduate from the program, compared to non-opiate offenders [55]. Therefore, efforts within this extension of criminal justice treatment need to reevaluate policy structure that expands access to the most up-to-date standard of care for opiate-dependent offenders [20].

2.2.1 Evidence-Based Treatment

A significant body of research on MAT has demonstrated strong clinical outcomes in achieving abstinence and long-term recovery, in both, general and criminal justice populations. All evidence-based treatment formulations of MAT have been approved by the Food and Drug Administration (FDA) to treat opioid use disorders [56]. The Centers for Disease Control and Prevention (CDC), the National Institute on Drug Abuse, and the World Health Organization have also acknowledged its medical value in treating opioid addiction [56]. Other national organizations

such as the National Association of State Alcohol and Drug Abuse Directors (NASADAD) and the National Institute on Drug Abuse (NIDA) have released formal statements supporting the dissemination of medication treatments for opioid dependence within the CJS [57]:

> "Medications are an important part of treatment for many drug abusing offenders. Medicines such as methadone, buprenorphine, and extended-release naltrexone have been shown to reduce heroin use and should be made available to individuals who could benefit from them." [58]

Because SUDs are heterogeneous in nature, involving a complex range of psychological, social, biological, and genetic factors, there has been substantiated acceptance of OUD as a chronic medical condition [59]. For example, SUDs often undertake several underlying characteristics, notably: all symptoms and impairments owe a certain degree of dysfunction to brain chemical imbalances; they frequently co-occur with other debilitating mental health conditions; the etiology and symptom expression is strongly influenced by the interplay of social determinants; they are often associated with stigma and discrimination; and they frequently take a relapsing cycle [11].

Although SUDs have traditionally been treated through separate behavioral health delivery channels, with an emphasis on abstinence-based models of care that include a variety of psychosocial approaches [60], the American Society of Addiction Medicine (ASAM) defines addiction, in part, as a "primary, chronic disease of brain reward, motivation, memory and related circuitry"[59]. By the same token, addiction does not absolve the offender of responsibility from misuse of illicit drugs or other criminalized behavior, but does underscore the importance of understanding how neurologic deficits may exacerbate physiological conditions outside the control of the drug-involved offender [61,62]. From a biological framework, medical practitioners and well-versed substance use experts can aid corrections officials in making informed decisions that

recognize OUD as a chronic disease, comparable to diabetes, asthma, hypertension, or cancer—all necessitating medications [61,62]. In light of the contributing variables of addiction, the chronic disease model, as applied to OUD, necessitates efficacious biological treatments, even for opiate-dependent offenders who have undergone stringent detoxification during incarceration [59,61,62].

Given the pharmacological advantage of administering MATs to opiate-dependent offenders, the scientific evidence-base for MAT and its physiological effects of opioids are well studied. On initial use, opiates permeate the blood-brain barrier, which serves to protect from fluctuating neurotransmitters capable of disturbing neural function, and attach to receptors on the brain cell, activating a rush of neurotransmitters generating a euphoric sensation [63]. After continued use or misuse, physiological dependence can contribute to heavier opiate use over time [63]. The medications used to treat opioid dependency act on these same opioid receptors, particularly the mu receptors. Each drug treatment has its own distinctive pharmacological properties and safety profile, implying that the same mode of treatment may not work for everyone, as each individual comes with their own history and level of addiction. These medications work in one of three ways in tempering these physiological risks: full opioid agonists, partial opioid agonists, or full opioid antagonists.

Methadone is a full opioid agonist. Other substances acting as full agonists include heroin, morphine, oxycodone, and hydrocodone. Individuals with opioid use disorder can be given methadone to activate the same opioid receptors but are absorbed into the blood over a longer period, neutralizing withdrawal symptoms and severing the psychological link between drug initiation and euphoria [64]. Methadone is orally administered. It distributes widely throughout the body and is broken down slowly. Because of this, methadone is slower to start working and

remains active in the body for a long time. Although methadone is a full agonist, it does not produce the same euphoric effects as heroin, oxycodone, or other full agonists, enabling people taking it to lead productive and fulfilling lives. It is imperative to understand that methadone is a maintenance medication, that treatment length can vary, and it is not a cure. Maintenance medication qualities are geared towards re-stabilization and control of an illness or its symptoms over time, and remain effective only for the course of the treatment's length. Furthermore, when doses are appropriate, methadone improves treatment retention and, as a result, decreases relapse and the health and criminal problems associated with illicit opioid use [47]. Long-term methadone maintenance therapy is more effective than either detoxification with methadone or abstinent-based treatment in decreasing heroin use and retaining patients in treatment [65,66].

Buprenorphine is a partial opioid agonist. It can be used as a product by itself containing only buprenorphine hydrochloride (e.g. Subutex), or as a combination product with naloxone (e.g. Suboxone, Zubsolv). Because naloxone is an antagonist, administering a buprenorphine combination activates the receptors in the brain, but to a less impactful degree than a full agonist [64]. As a partial antagonist, the naloxone blocks additional harmful opioids from triggering receptors while carrying out its small opioid reuptake to suppress withdrawal symptoms and cravings [63]. Thus, the drug formulation is known to divert individuals from misusing or abusing the medication, especially given its ceiling effect. A review of trials has found that buprenorphine, taken at high doses (16mg), can effectively reduce illicit opioid use and retain patients in treatment compared to placebo [67]. When comparing the treatment efficacy between buprenorphine and methadone, studies have shown that buprenorphine appears to be as effective, dependent on dosage sequences [67]. Furthermore, among justice-involved individuals, buprenorphine was found as the more desirable treatment regimen to engage in prior to correctional release [68].

Naltrexone is an opioid antagonist. Thus, it blocks the full effects of opioids and requires patients to be detoxed completely from opioids, typically 7 to 10 days, before initiating treatment [64]. Unlike the daily dosage requirements associated with methadone and buprenorphine, an extended-release injectable can be administered once a month. Because the injectable form of naltrexone has no diversion or abuse potential, it is not a controlled substance. This offers an alternative to agonist therapy. Even though the extended-release injectable naltrexone has not been studied as in depth as its counterparts, research indicates that it can improve patient adherence to the medication and increase treatment retention [47,69]. Treatment retention affords clinicians time to link patients to psychotherapy and community programs and services that will support the positive social adjustments patients will need to make [47]. Injectable naltrexone has also been found to be effective in reducing relapse to opioid use criminal justice populations as well [47].

2.2.2 Barriers to MAT Implementation

Even with the current literature and contribution of more than forty years of community-based research evidence, primarily focusing on methadone maintenance, the U.S. continues to lag behind many developed countries in providing MAT to justice-involved populations [47]. Ideological objections and adherence to the medical model of addiction, in part, may be the most prevalent factors in upholding a medication-free treatment approach within the CJS [20,45,70]. Such gaps in treatment approaches may be due to administrative personnel who lack sufficient knowledge of MAT, including stigmatizing beliefs toward MAT and its efficacy in treating substance use disorders [71,72]. Some corrections officials also believe MAT to be "exchanging one addiction for another" [72]. This mentality is especially widespread among drug court officials who have established policy and partnerships with abstinent-based programs in the community

[45]. Other obstacles were associated with lack of sufficient medical staff and security concerns regarding medication storage [73]. Insufficient linkages between penal institutions and community-based MAT providers have also been cited as an organizational-level barrier to treatment referrals [71,73]. Other barriers to MAT include costs associated with the medication, potential for drug diversion, and negative public and patient opinion about treatments such as methadone and buprenorphine [20,45,70,72].

3.0 Literature Review

Overall, among criminal justice populations, MAT has been shown to reduce drug abuse, specifically among injection-drug users, reduce recidivism, protect against overdose, and increase long-term community-based treatment retention rates. Furthermore, studies, including systematic reviews, have concluded that MAT cuts all-cause mortality among opioid addiction patients by half or more [56]. More specific literature pertaining to implementation in correctional facilities, have backed opioid agonist therapies in decreasing risk of overdose and preventing mortality among this subpopulation. The following literature specifically pertains to research conducted within the CJS that asserts MAT as a protective agent against various harmful post-release community outcomes, most notably, mortality.

3.1 Kinlock et al.

In its infancy, and in response to significant community concerns among Baltimore drug treatment providers and corrections officers, a first prison-based methadone pilot project was initiated in 1999. Based off Kinlock and colleagues' [74] preliminary findings among a small sample of 20 prisoners, of which 53% were found to be retained in community-based treatment six months post-release, a large-scale study emerged by the principal investigator incorporating 197 heroin-dependent participants. Consenting prisoners were randomized into three treatment conditions: prison-initiated counseling with community treatment referral on release; prison-initiated counseling with transfer to community-based methadone treatment on release; or prison-

initiated counseling and methadone treatment with transfer to similar community-based treatment. In-prison counseling and methadone was provided by the same community treatment provider, which was then continued upon release by the same returning citizen. A 3-month post-release assessment was then conducted. Significant findings included: both groups, prison-initiated counseling and methadone, and prison-initiated counseling with methadone community transfer, resulted in 70% and 50% entering treatment. This was in stark contrast to 8% in the counseling-only group entering community-based treatment. Of the treatment conditions, counseling-only participants were also found most likely to use heroin and be reincarcerated. Most notably, 90% of individuals who initiated methadone pre-release were found to be retained in community-based treatment, 10 days post-release. Results indicated that in-prison methadone maintenance prolonged treatment retention and acted as a protective agent against relapsing and reincarceration, especially within the first 10 days, which are the most critical in regard to preventing overdose mortality [74].

3.2 Brinkley-Rubinstein et al.

Other studies have found that the rate of MAT retention in community-based treatment centers following release increases when MAT is initiated in correctional facility pre-release [75]. A randomized control trial assessed 12-month outcomes with 179 participants (people incarcerated for six months or less), including 128 who were treated and 51 who did not receive methadone treatment. Results found that individuals on methadone were less likely to use heroin and engage in injection drug use, as well as reported fewer non-fatal overdoses due to continual engagement in community-based treatment, per 12-month follow-up interviews. Forced withdrawal from methadone reduced likelihood of MAT engagement long-term. Findings indicate that providing

methadone to incarcerated populations pre-release impacts long-term treatment retention in the community and reduces the risk of fatal overdoses post-release [75].

3.1 Green et al.

In a recent research study conducted in July 2016, the Rhode Island Department of Correction (RIDOC) began implementing a new model of protocoled treatment, making accessible three forms of MATs (methadone, buprenorphine, and naltrexone) to all inmates screened with OUD. Outside community vendors/providers assisted with having all sites operational by January 2017. To determine the efficacy of this new MAT expansion, this research study utilized a retrospective cohort analysis by linking data from the Rhode Island Office of State Medical Examiners for all identified fatal overdose cases occurring from January 1 to June 30, 2016, and from January 1 to June 30, 2017, to data from RIDOC inmate releases. Tests compared differences in decedent (individuals recently incarcerated if they died within 12 months of release from RIDOC) characteristic groups between 2016 and 2017. Within the 2016 group, results determined that 26 of 179 individuals (14.5%) died of a fatal overdose following recent incarceration, compared to 9 of 157 individuals (5.7%) in the 2017 period. This represents a 60.5% reduction in mortality. Based on these results, we are able to better identify the value of expanding MAT options in correctional facilities to reduce mortality risks of inmates (post-release), since prior to this study, only methadone had been offered [50].

3.2 Magura et al.

The following study implemented one of the first jail-based buprenorphine pilot programs in the U.S. [76]. Within Rikers Island Jail in New York City, 116 heroin-dependent offenders (not currently enrolled in community-based methadone treatment and sentenced 10 – 90 days) were randomly assigned to either a buprenorphine or methadone treatment group. Both treatment groups yielded high completion rate during jail period, however, the buprenorphine group (48%) was found to report to their post-release community center significantly more often than the methadone group (14%). Inmates in the buprenorphine group also reported a significantly higher (93%) intention to remain in community treatment following release than the methadone group (44%). No difference was found between treatment groups in regard to self-reported post-release reincarceration. Thus, a preferential treatment for buprenorphine maintenance in the community appears to be evident. Additionally, the study also noted differences in the cost and staff time of administering both medications. Because buprenorphine tablets were used in the study, approximately 15 min per inmate per day were used in preparing for, dispensing, and monitoring the ingestion of the medication. This was compared to 1 – 3 minutes in delivering liquid methadone [76].

3.3 Lee et al.

In one of the first studies conducted within the CJS using Vivitrol, a multisite, randomized, controlled trial showed that extended-release naltrexone (Vivitrol) could be a promising practice in reducing rates of opioid relapse [77]. A total of 153 participants were assigned to Vivitrol and 155 to treatment as usual (TAU) (e.g. brief counseling, and community treatment programs referrals). Over the course of the 24-week treatment period, the percentage of participants that reported a relapse event was lower among the Vivitrol treatment group (43%) compared to the TAU group (64%). However, after treatment period ended, at 6-month period, opioid relapse events indicated no difference between the Vivitrol and TAU group. Although there were no overdose events in the Vivitrol groups compared to seven in the TAU group, rates of self-reported reincarceration rates were nonsignificant in both groups [77]. Thus, it remains uncertain as to whether Vivitrol can be protective against reincarceration or long-term mortality. For this reason, buprenorphine and methadone remain preferred treatments for many patients.

3.4 Gisev et al.

The scope of this international study was large in nature, integrating four datasets over the course of 22-years to analyze the cost-effectiveness of MAT, community-based retention rate, and associated mortality rates among prison settings in Australia [78]. The population consisted of opioid-dependent offenders between 1993 and 2011 who had previously been in full-time custody. A cohort of 47,196 participants were used to determine cost-effectiveness following release (e.g. reincarceration). A minority of opioid-dependent participants were found to be reincarcerated overtime that saw costs of $3billion between 2000 and 2012 among this cohort. This finding offered realistic costs among opioid-dependent offenders in the criminal justice system. Another aspect of the study found that among 15,600 first time MAT entrants, 56% on buprenorphine spent less than three months in treatment, compared to 30% on methadone. Similar treatment retention trends continued after 12 months. This aspect of the study offers substantial evidence for providing a more effective treatment option for opiate-dependent offenders, especially over an extended period of time. A third aspect of the study found that among 16,715 participants, the hazard of all-cause death was 74% lower while on MAT in prison setting, compared to not receiving MAT while in prison. Finally, an analysis of 16,453 records found that the lowest mortality rate (post-release) was seen among those who continued community-based MAT following release [78]. The value of this study is three-fold in presenting concrete evidence on the effectiveness of MAT provision in correctional facilities.

Other international studies conducted in criminal justice institutions have also found significant favor with the provision of MAT in reducing mortality and reincarceration rates among its returning citizens [79–81].

4.0 Allegheny County: Opioid Overdose Data Analysis

In 2017, 47,600 opiate-related overdose deaths occurred in the United States, encompassing nearly 68% of all national drug overdose deaths [82]. Pennsylvania—one of the three worst states for percent increases in overdose deaths—accounted for 5,456 drug-related overdose deaths in 2017. This reflects a rate of 44.3 deaths per 100,000 persons compared to the national rate of 22 per 100,000 [83]. Fentanyl was detected in 67% of these fatal overdose cases—a more than 1,400 case incident increase from 2016 [83].

Allegheny County, currently ranked second in drug overdose deaths among all counties in Pennsylvania, has experienced fatal overdose rates higher than those seen in many other states in the country. It has thus become imperative to track this epidemic, specifically in Allegheny County where 735 drug overdose deaths were documented in 2017, up from 650 in 2016, 424 in 2015, and 342 in 2014 [84].

Using data from the Allegheny County Data Warehouse, which tracks and identifies human services utilization [85], an Opioid-Related Overdose Deaths Report (2008-2014) was released. The report identified the number of individuals who had been incarcerated in Allegheny County Jail (ACJ), as well as length of time from jail release until fatal overdose. Out of the 1,399 who died from an opiate-related overdose, 531 cases or 38% had previously been incarcerated in ACJ in the past [86]. An additional analysis found that 211 of 531 people (39.7%) had been incarcerated and released from jail within the year proceeding death. However, the greatest proportion of these deaths (54 of 211, or 26%) occurred within the first 30-day period following jail release; more than half (109 or 211, or 52%) occurred during the first 90 days [86].

This trend continued in the most recent Opioid-Related Overdose Deaths report update (2015-2016), where 448 of 910 or 49% decedents had ever passed through ACJ [84]. This is in stark contrast to the 38% in the prior reporting period (2008-2014). Moreover, the 2015-2016 report found that, 164 of 910, or 18%, of people had an incarceration and release from jail in the year prior to death, compared to 15% in the previous report (2008-2014). Again, the largest number of overdose deaths, 43 of 164, or 26%, occurred during the first 30-day period following jail release, and approximately half (77 of 164, or 47%) occurred during the first 90 days [84].

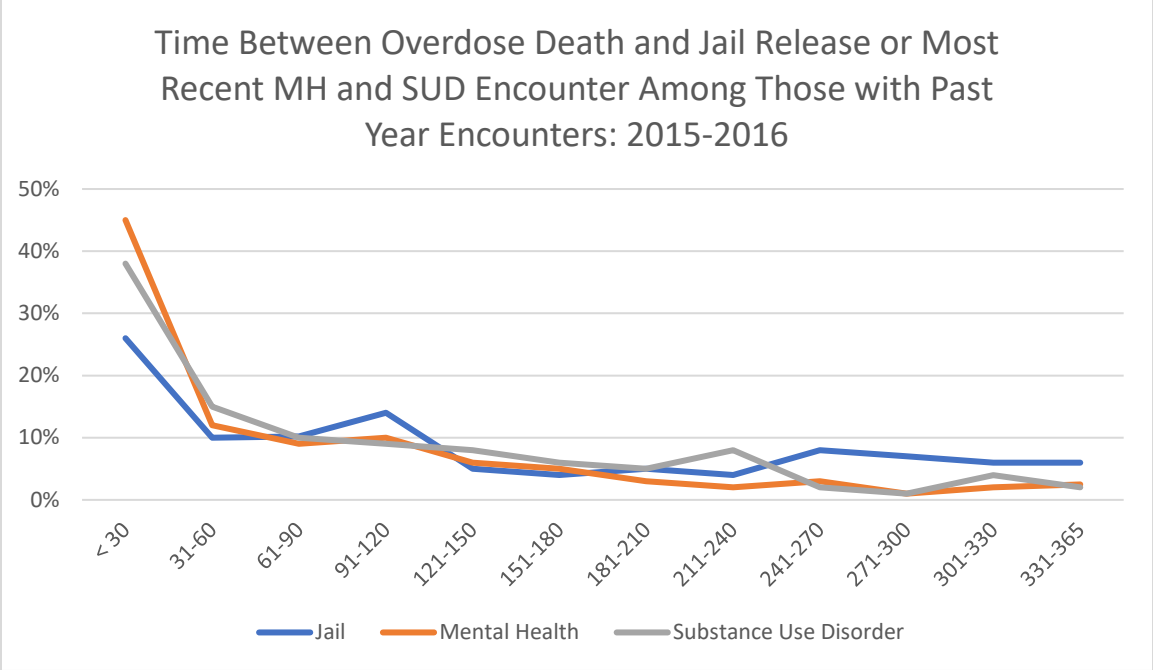

Figure 1. Time Between Overdose Death and Jail Release or Most Recent MH and SUD Encounter Among Those with Past Year Encounters: 2015-2016

4.1 Allegheny County Jail: Substance Abuse Services

Amidst reported overdose mortality rates, a key question is whether jail treatment programs can be effective given the short duration of most jail terms. On one hand, about 95% of individuals

in jails and prisons will eventually be released to reintegrate into communities, and with effective drug treatment, jails can serve as point of interceptions to alleviate recidivism and relapse rates [87]. On the other hand, sustained treatment may run a higher risk of being hindered, with one-third of U.S. jail inmates being released and another one-third being admitted within the same week [87]. With only 61% of U.S. jails providing some form of drug intervention—the majority offering only drug education—there is certainly opportunities for service improvement [87]. However, because one of the major impediments to successful reentry is drug abuse, there remains a need to research and assess substance use protocols and treatment methods within the CJS [87].

With the prominent availability of heroin and fentanyl affecting 97% of Pennsylvania counties and the presence of fentanyl-related substances ever increasing at a rate of 400% from 2015 to 2017 in fatal overdose cases [83], Allegheny County Jail's pre-release population is not immune to the opioid epidemic. Therefore, Allegheny County Jail's current substance abuse services will be examined. Per the description of services found on Allegheny County's Drug and Alcohol website, the current drug and alcohol (D&A) rehabilitation program consists of the following steps:

Upon arrival, inmates are screened for substance abuse dependency during intake at the jail. Intake nurses notify clinicians of positive screens, who then conduct D&A assessments. Assessments are also conducted upon inmate request or referral from staff. Once assessed, inmates may be transferred to a Treatment (5MC) or Education (5E) program housing unit/pod, or may be referred into other services [88].

4.1.1 Licensed Drug and Alcohol Program Pod (5MC)

5MC (pod/unit) is a licensed D&A, non-hospital, rehabilitation program. The program is a level 3C (Long Term Residential) program under the Pennsylvania Client Placement Criteria Assessment (PCPC). The client stays in the program for 12 weeks during which they receive intense D&A therapy, groups and one-on-one counseling services, and focus on topics such as relapse prevention, increasing motivation, emotional self-regulation and natural highs, to cite a few. Upon completion, the client may return to 5E (pod/unit) to participate in aftercare or they may return directly to the general jail population [88].

4.1.2 Drug and Alcohol Education Pod (5E)

The D&A education pod provides a structured living environment with D&A services, including triage, education, and aftercare. Clients are assessed to determine appropriate level of care. Clients recommended to 5MC inpatient services or Family Based D&A education (Re-Entry Center) will remain on 5E and participate in drug and alcohol classes while waiting for a space to be available in either of these programs. Clients referred to in-house Drug and Alcohol Education will complete a 12-week program. Upon completion they will be discharged from 5E [88].

A 16-week Drug and Alcohol Aftercare curriculum is provided on 5E for clients who have completed either inpatient D&A (on 5MC) or the Family Based D&A program (Reentry Center). Those who complete the 16-week aftercare may remain on 5E as a graduate participant or return to the general jail population [88].

4.1.3 Drug and Alcohol Education Classes

Family-based D&A program focuses on topics such as lapse and relapse prevention, increasing motivation and the effects of addiction on the family. Eligible inmates are assessed by the provider for eligibility to participate in family-based services. The program consists of 12 weeks of group education, 4 days per week (Monday - Thursday), for 3 hours per day. The Addiction and Trauma program offers gender specific D&A education for women. The program is a 12-week education curriculum and meets for three hours each week [88].

4.1.4 Jail Alternative

Those who qualify undergo treatment and a recovery program (in the community) and are not incarcerated. The jail works with the Department of Human Services (DHS) and the courts in implementing this program [88].

4.1.5 Outpatient Drug and Alcohol Treatment

The Outpatient D&A program offers individual and group D&A therapy to clients on a weekly basis. The program is based on a continuity-of-care model with outpatient services beginning in the jail and continuing after release. After release, the program facilitates a transition to community-based outpatient D&A services with a variety of providers [88].

5.0 Methods

5.1 Participants

A total of 15 community stakeholders within Allegheny County completed semistructured qualitative interviews and a survey for this study. The study sample included people 18 years or older working in Allegheny County, Pennsylvania. The majority of participants were male (67%, n = 10). The group had a high level of educational attainment, with approximately a third reporting that they had completed a graduate degree. Initial participants were recruited from an Opioid Advocacy Forum provided by Pennsylvania Harm Reduction Coalition. Thereafter, a combination of purposive and snowball sampling was used to recruit participants with a focus on obtaining a broad range of stakeholders with differing professional backgrounds associated with providing services to returning citizens in Allegheny County. Participants within this sample included: criminal justice workers, community service providers, health care providers, public officials, emergency medical service personnel, and law enforcement officials.

In order to decrease barriers to interview participation and assure participants of the confidentiality of their responses, interviews were either conducted in a private location at the participants' place of work, via private phone calls, or in other places designated by the interviewee. Participants were assured that their responses would not be shared with their organization, that their names and other identifying information would be removed from the transcripts, and the recordings would be destroyed at the conclusion of the study. This study was approved by the Institutional Review Board of the University of Pittsburgh.

5.2 Semistructured Interviews and Survey

Semistructured interviews were conducted by the researcher to the convenience sample of 15 stakeholders. Interviews involved questions in accordance with the stakeholder's function, service, and connection with previously incarcerated populations. In the process, perceptions, experiences, and knowledge of a MAT jail-based initiative in relation to institutional and community barriers were examined.

Additionally, the second part of the interview involved the completion of a survey that was administered by the interviewer: Practices, Perceptions, and Barriers that Influence Allegheny County Jail's MAT Use. The survey was developed from a combination of anticipated perceived barriers and prior correctional surveys implemented among multiple criminal justice institutions [73]. Respondents were asked to rate a series of 17 factors, categorized as barrier statements, that might influence Allegheny County's use of Medication-Assisted Treatment in jail (e.g. negative perception of MAT, liability concerns, logistical obstacles) using a Likert-type scale. A rating of a 1 indicated the factor was "unimportant," a rating of 3 indicated the factor was "moderately important," and a rating of a 5 indicated the factor was "very important." Respondents were then prompted by follow-up questions on all factors which received a rating of 4 and 5. If respondents were not well-versed in the factor, they were informed they could give a null response.

5.3 Data Analysis

Using data from the interviews and survey, a qualitative matrix analysis was conducted by the researcher to streamline categorical constructs from responses across different groups of stakeholders. A matrix is defined as "a set of numbers or terms arranged in rows and columns; that within which, or within and from which, something originates, takes form, or develops" [89]. In this qualitative data analysis, the crossing of several constructs among participants evolved from descriptive quotes associated with community concerns and consequences. In using the matrix display, intersections were graphed between constructs and specific groups of participants.

To further contextualize these constructs, as they would relate to the recovery of an opiate-dependent offender, the Ecological Systems Theory was implemented to elucidate potentially different levels of barriers influencing Allegheny County Jail's MAT initiative. The theory posits that an individual exists within a nest of systems that facilitates or challenges the individuals' behaviors [90]. In this framework example, we take an in-depth look at how these factors may exacerbate or facilitate an opiate-dependent offenders recovery condition.

6.0 Results and Constructs

A series of seven systemic constructs emerged from the matrix analysis: provider training and attitudes, system policies and issues, continuum of care, probation and drug court, logistical issues, partnership limitations, and facilitators. Provider training and attitudes included intrinsic attitudes, perceptions, beliefs, and education, or the lack thereof, associated with the introduction of MAT as a viable practice within Allegheny County Jail. System policies and issues included the current county jail treatment orientation of individuals with OUD and its associated consequences on the greater Pittsburgh community. Continuum of care included institutional and perceived barriers as related to appropriate medical protocol with individuals in active recovery. Probation and drug court included treatment orientations of alternative correctional entities and their impact on MAT practice. Logistical issues included perceived constraints associated with costs, security, diversion, lack of medical personnel and human resources, and feasibility of launching a jail-based MAT program. Partnership limitations included factors and concerns related to developing and sustaining MAT provider relationships within jail and community. Facilitators included windows of opportunity provided by existing services for initiating a jail-based MAT program, as well as positive community initiatives.

Respondents' individual stories, perceptions, professional experiences, and knowledge of MAT and harm reduction practices highlighted the role each construct played in facilitating or barring a jail-based MAT program in Allegheny County. The constructs contextualized varying levels of treatment gaps, opportunities, and challenges potentially encountered within Allegheny County Jail, of which, also had implications in the extension of that treatment model into the community. Furthermore, an overarching theme of "stigma in recovery" emerged from the

interaction of these constructs, as responses undertook broader oppositional elements associated with lack of social equity, treatment, and support for criminal justice populations living with an OUD.

6.1 Survey Results

Survey results varied by stakeholder. As previously mentioned, some respondents may have been limited in their affiliation and knowledge of survey items, thus, the number of responses were moderately inconsistent across the board. One respondent opted to forgo the survey and provide a comprehensive synthesis of the processes associated with opiate-dependent offenders in Allegheny County Jail. Nonetheless, interviewees were given the freedom to elaborate on all rated items, but especially those receiving a score of 4 (important) or 5 (very important). The top 6 factors were (1) negative perception of MAT as a substitute drug; (2) jail, probation, and drug courts favor drug-free treatment; (3) inadequate info at jail about MAT; (4) uninformed of clinical effectiveness of criminal justice populations; (5) cost and reimbursement issues; and (6) logistical obstacles.

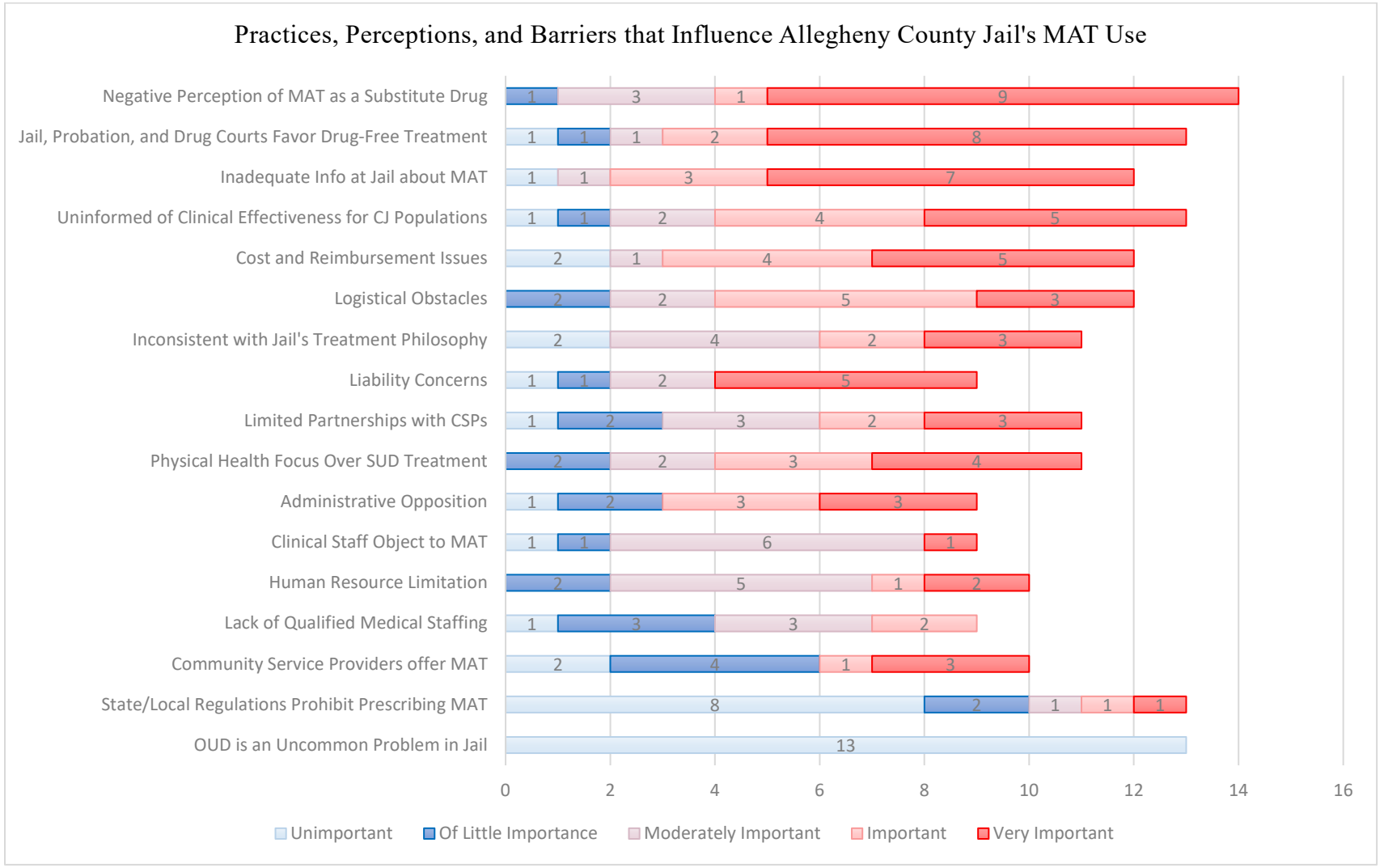

Figure 2. Survey: Practices, Perceptions, and Barriers that Influence Allegheny County Jail's MAT Use

6.2 Matrix Analysis

Additionally, even though survey results did vary by respondent, subsequent interview questions supported the formulation and interaction among these constructs in the development of the matrix.

Table 1. The Matrix Analysis

TABLE 1: THE MATRIX		CONSTRUCTS						
		Provider Training and Attitudes	System Policies and Issues	Continuum of Care	Probation & Drug Court	Logistical Issues	Partnership Limitations	Facilitators
PARTICIPANTS	Criminal Justice Workers (3)	**Deficit** in education and training among "a lot of medical and corrections staff" who have the "substitute of one drug for another mentality" **Inconsistent** views of MAT as a recovery tool **Stigma** in recovery prevalent in the CJS **Gaps** in SUD treatment due to unacceptance as a physical health ailment, SUD viewed secondary. **Punitive** approach taken to SUD services	**Limited** Subutex/methadone treatment to pregnant women **Vivitrol** pilot program, "medical version of forced abstinence" **Licensed** (DDAP) SUD services limited to women **Lapse** health insurance coverage following release **Expectant** mothers tapered off MAT 4-6 weeks, postpartum	**Discontinuity** of community-based MAT on detainment **Reluctance** to initiate MAT done in "beneficence of the client" **Transient** booking center interrupts referral process due to unpredictability **Inconsistent** warm handoff procedures, "resources & info on Centers of Excellence provided" to some	**Discontinuity** of medication options under program **Limited** programming to abstinence-based community recovery, "a lot of those places don't accept MAT" **Disapproval** of MAT as a "front-line approach"	**Reluctance** towards "mixing of abstinent & MAT populations on treatment pod" **Limited** treatment space for high census count (80 men & 20 women). **Cost** issues, but fronts medication cost for pregnant women to avoid maltreatment of baby **Security** concerns with methadone transport protocol **Limited** treatment personnel	**Historical** relationships limit partnerships to abstinence-based community providers (e.g. drug court preferred providers) **Limited** community MAT rehab programs (e.g. Sojourners House and Family Links for expectant mothers).	**Dissemination** of Narcan on discharge **Established** contract with methadone clinic **Education** on overdose risks provided via Narcan video run in jail **Openness** about MAT education but contingent on specific personnel's bias **Established** space, "HOPE pod" for men. **Deployed** specialist by DHS for those interested in MAT
	Emergency Medical Personnel (1)	**Stigma** attached to education initiatives to mobilize efforts & raise awareness in communities **Adjustment** to "new concept" of harm reduction by EMS, compared to 2 years ago where "no one had heard of it"	**Overreliance** on Narcan leads to "lost opportunities" in community despite proactive Narcan policy **Disconnect** between engaging returning citizens in treatment & provision of Narcan	**Disruption** in active recovery treatment "a lot of people in the county are in that situation" **Brief** detainment on "technical violations" hinder continuity of treatment	**Divide** in county treatment philosophies. **Disapproval** by judges & drug court officials "who don't believe in MAT & that drives a lot of the policy in the county"	**Diversion** of controlled substance viewed as excuse for not initiating MAT in jail setting, "chance of diversion significantly lower than what people think"	**Deterrence** from medications by halfway homes due to regular urine analysis. Leads to use of other harmful drugs that are not detectable. **Limited** MAT halfway home partnerships lead to "dangerous choices" made by returning citizens	**Educational** efforts to raise community awareness on harm reduction is ongoing, "we need to build a general 4hr block of training"

TABLE 1: Continued		CONSTRUCTS						
		Provider Training and Attitudes	System Policies and Issues	Continuum of Care	Probation & Drug Court	Logistical Issues	Partnership Limitations	Facilitators
PARTICIPANTS	Healthcare Providers (4)	**Untrained** medical and nurse staff with MAT due to "nonrequirement" to use it **Inconsistent** understanding of when to initiate MAT **Stigmatized** "beliefs and misconceptions" necessitates education "I had to work two years strictly with buprenorphine to really understand it, and actually not to be afraid of it"	**Non-medical** personnel drive medical policy **Liability** placed on health systems with "significant portion of inmates passing through ER" **Unethical** policy rooted in "bias against MAT" **Reductionistic** approach with NA & AA meetings, "not enough to address long term recovery" **Pitfall** of Vivitrol is precipitated withdrawal	**Forced** detox of "stable evidence-based medical treatment" problematic and "unethical." **Disruption** in prescribed medications due to detainment viewed as "unethical," need to provide "evidence-based care that will keep them engaged in care, keep them alive, and keep them healthier than any other modality that we know"	**Bias** support for Vivitrol as "medical therapy" by drug courts **Inability** for drug court clients to be "honest" about medications they need. Parole officers say, "no, vivitrol only." **Inconsistent** drug court rules & sanctions across 45 different counties	**Limited** clinical staff due to "burnout and tremendous turnover rate" **Cost** of MAT is too high in community settings, so more costly/problematic in correctional settings **Security** concerns associated with medial policy, "medical decision-making being made for security reasons"	**Limited** direct patient navigation/referrals from jail, as majority of "patients come from halfway homes that refer to us" **Unsuccessful** outreach efforts, "we've tried to connect with ACJ and it hasn't worked out. Maybe they're given a list of providers, I don't know"	**Established** contract with AHN to provide all medical and psychiatric services. **Training** and waivers with med staff "easily solvable problem" **Provision** of services to "around 80% of patients on Suboxone, and 20% on Vivitrol" in community setting
	Law Enforcement Officials (1)	**Deficit** in proper education seen as "biggest barrier" "Corrections officers and warden need to fully understand the role MAT has in recovery" **Stigmatism** "always attached to methadone clinics in communities," need for community education to reduce stigma associated with services.	**Recidivism** cycle due to limited wraparound services for returning citizens **Overdose** cases attributed to "multiple calls from same person" in community	**Reintegration** into community could be facilitated/improved by MAT receipt in jail **Extension** of jail SUD services to community critical for those in recovery	**Disapproval** of MAT may hinder proper treatment, but dependent on judge, "some are old fashioned"	**Cost** is a "high barrier," because of "jail budget and understanding what's reimbursable can be an issue" **Limited** resources for high census count **Security** concerns due to "contraband with MAT" and potential for misuse	**Limited** treatment options should not deter returning citizens from engaging in community-based MAT, "I've not known anyone to overdose on MAT"	**Outreach** efforts in community should focus on follow-up protocol after jail release, "we'd like to see a partnership where those released try to voluntarily contact local police stations for help and follow-up. Our number one goal is to save lives. All lives are precious" **Trained** to carry and use Narcan at all times

TABLE 1: Continued		CONSTRUCTS						
		Provider Training and Attitudes	System Policies and Issues	Continuum of Care	Probation & Drug Court	Logistical Issues	Partnership Limitations	Facilitators
PARTICIPANTS	Public Officials (3)	**Objection** to MAT seen as "ubiquitous" and "prevalent" among SUD Tx providers **Abstinent-based** model predominant ideology of CJS, "they seem to be the last people to get it" **Stigmatizing** "moral judgments" formed by medical personnel, "in 2017, we had 1110 overdose calls in the city, about a call every 8 hours. And you start to hear of resources being pulled for junkies who overdosed again" **Lack** of equity, "not worthy of treatment"	**Unlicensed** treatment for SUDs a problem **Vivitrol** viewed as "comfortable policy because it is not a controlled substance" **Siloed** jail system is "rigid" and "tremendously complex to break down" **Political** fallout imminent with "tax-payer funded system" "Public health should not be political, though"	**Forced** detox protocol viewed as unethical, "between 2016 and 2017, 500 some people who had been engaged in methadone and Suboxone" had treatment terminated **Liability** placed on health system **Transient** booking agency presents barriers to continuity of treatment. People are there for "undetermined period of time and may move to other facilities"	**Prevalent** abstinence-based ideology with specific judges who "refuse to have anyone in their court using MAT…it's disgusting." **Disapproval** by judges & magistrates who harbor "strong opinions against MAT as continuing addiction. Need to "educate judges" to not interfere with medical treatment	**Cost** per inmate, waiver, etc. an issue. **Security** used as "excuse" to not implement MATs. **Difficult** to build "leadership" around overworked staff **Cost** barriers due to prevailing argument that it does not make "cost sense" to initiate MAT due to unpredictability of release **Limited** mobility efforts with Pittsburgh being "1 of 130 municipalities in Allegheny County"	**Deterrence** from MAT by halfway homes, "some refuse to accept someone on MAT" **Disrupts** coordination between rehab centers & housing options **Limited** short-term providers that could navigate someone during brief detainment for "only 2 or 3 days" **Lack** of "city agency presence in jail," although "city resources are deployed to address overdose"	**Improved** screening process of SUD identification **Trained** doctors currently prescribing medicine in jail, so "logistically easier for Suboxone" **Dissemination** of Narcan raises awareness. "We distributed 6,000 kits one year…focusing on first responders, community groups., underground orgs. campaign to normalize & destigmatize Narcan."
	Community Service Providers (3)	**Competing** and mixed views MAT among CSPs, "People don't fully understand MAT" **Pushback** towards MAT, "concept of counseling has really changed with MAT" **Bias** for Vivitrol among abstinence-based providers	**Limited** "political cover" to provide MAT in jail **Vivitrol** "lobbying" & "free doses" seen as major reason for policy window **Oriented** towards corrections, "not rehabilitation" **Punitive** policy "not looking to treat SUDs holistically"	**Unethical** & "disturbing" to take a detainee off a "life-saving medication" but due to "lack of resources in jail" **Limited** wraparound around services for released individual **Gap** with health insurance coverage after jail release, "they're going to get cut off with MATs"	**Bias** towards "12-step help groups, NA meetings…they don't believe in MATs" **Misperception** of drug courts position on MAT **Limited** channels of service with JRS and Probation dept. being two largest entities to work with drug court	**Limited** navigation due to "closed environment" that hinders "capacity for outside provider" to implement services" **Security** concerns, "so that's the fear, that'll disrupt the community, fights, riffs, issues on pod" **Fiscal** priority on "reducing resources" "imagine med line with MAT, going to need to hire more staff"	**Complex** interplay of factors when establishing jail-community partnerships. **Lack** of established requirements for provider contract terms. Profit element seen as obstacle. "Providers are everywhere, but who gets the contract?" **Hesitance** towards MAT orientation by halfway homes, "limited by their own providers"	**Opportunities** for drug courts to be "safety nets" **Facilitated** linkage by some peer navigators that will meet with prospective MAT patients in jail **Improvement** of SUD services contingent on allowing providers "to get in there and established on a certain pod" **Supportive** relationship with DHS for MATs

TABLE 1: Continued	CONSTRUCTS						
	Provider Training and Attitudes	System Policies and Issues	Continuum of Care	Probation & Drug Court	Logistical Issues	Partnership Limitations	Facilitators
Researcher's Critical Reflections/ Comments	**Education** and buy-in among jail-to-community SUD providers required to reduce/eliminate stigmatized beliefs associated with harm reduction and MAT **Training** among jail personnel, mental health, and substance use counselors should be holistic and inclusive of proven best practices for SUD treatment	**Medical** policy should be driven by EBP, appropriate public health experts, substance use counselors, and promulgate equity among all jail populations	**Discontinuity** of community-based MAT on detainment hinders opiate-dependent offender's active recovery **Transient** jail population complicates treatment referral processes **Coordination** of information between judges, defense attorneys, prosecutors, and jail should include risk assessment & consider history of SUD services	**Inconsistent** avenues of information, sanctions, and treatment orientation within drug court hinder EBP, and is further complicated by other surrounding county drug court policies **Participation** in drug court program contingent on judges/magistrates' bias or approval of MAT **Misrepresentation** of defendant's preferred recovery path **Lapse** in treatment plan collaboration with defendant leads to dishonest adherence to treatment terms	**Limitations** associated with clinical personnel turnover/burnout, financial constraints, and security with drug diversion are warranted, but not insurmountable. **Concerns** with treatment space that would mix abstinent-based and MAT populations	**Expansion** or development of comprehensive list of providers (health care and behavioral health) that would holistically treat the returning citizen **Navigation** and referral system from jail would be facilitated by warm handoffs between those established partnerships geared towards both, short and long-term recovery initiatives **Limited** community-based MAT partnerships and halfway homes that may hinder a housing applicant from coming in with MAT	**Opportunity** to expand services due to existing contracts and partnerships within jail between AHN and community methadone clinic for pregnant women **Openness** among City, DHS, primary health provider, and some jail personnel to establishing comprehensive educational and medical MAT program within jail

6.3 Provider Training and Attitudes

Participants shared their professional experiences, beliefs, and understanding of harm reduction, addiction, and MAT, as it relates to criminal justice populations. Among the majority of stakeholders, there was a predominant consensus that MAT and the concept of harm reduction is hindered by the lack of education and punitive approach taken by correctional institutions. One of the criminal justice respondents (#3) noted, "in my experience, they are not as familiar with it—I don't believe any of them have too much education." A law enforcement official (#5) highlighted the importance of breaking down this stigmatic barrier, particularly within the jail:

> *I think that there's a bias against methadone and suboxone because it doesn't make people feel bad, you know, it doesn't make people suffer. It's moralistic. The biggest barrier is proper education on MATs role in recovery, and properly informing everyone from clinical staff, to corrections officers, to warden, to county controllers, and everybody, needs to understand fully what the roles of MAT are in recovery, how they can work, and then work towards a solution to integrate them into healthy recovery.*

Deficits in appropriate training and information regarding MAT, as a recovery tool, were further attributed to systematic and personal stigmatization of addiction. This included perceptions of how jail staff felt about MAT and harm reduction practices, in general. One health care respondent (#6) stated, "the problem is there's still a lot of abstinent-based 12-step people who believe you're just substituting an addiction…I know for a fact that a lot of people in the county jail administration have that perception." Throughout the interview process, participants

continually perceived criminal justice agents as having negative views, including stigmatizing moral judgements, about MAT. Another criminal justice worker (#2) expounded on this further:

> *A lot of medical and corrections staff don't understand the evidence behind it and have the "substitute of one drug for another mentality" or that it will be abused. Some staff here see it as an alternative drug, that you're just getting high, but that's rarely the case. Even management have elements of that [mentality]. They don't see it as something that will help someone achieve their recovery goals.*

Lack of training initiatives may be largely contributed to the "multidisciplinary" nature of the jail regarding the division of departments (e.g. mental health, substance abuse, medical, security, etc.) and burdens associated with burnout, underpayment, and high turnover rate among staff. This would undoubtedly make it "difficult to ensure everyone had the same course of training," noted a public official (#10). Sustainability of trained and informed staff present a huge challenge within an "enclosed environment," which may hinder communication and agreement among stakeholders in "leadership roles." Because MAT and harm reduction is still perceived as a relatively new concept in the addiction recovery world, establishing a mandatory uniform training module that consistently addresses the benefits of engaging in such treatment comes with its own barriers. For instance, health care respondent (#6) felt strongly about prioritizing the initiation of treatment regardless of other commonly perceived requirements:

> *We're pushing Suboxone as a treatment modality. We're really having conversations with providers about this whole concept of MAT, that somehow you have to have complex steps associated with therapy, drug treatment, 12-step meetings, and everything in order for people to get Buprenorphine. We're really pushing back against that. We feel that the most important thing for a person to*

have is Buprenorphine because that is the drug that will keep them alive and save them. And so, we see that as harm reduction, but if someone isn't willing to engage in behavioral treatment, or drug and alcohol treatment, or 12-step programs, but they're willing to take suboxone, then that's that. It's sort of akin to patients of mine who come in and you know, were screened for depression and they're clearly depressed and they need an antidepressant. I'm not going to wait until they see a psychiatrist or therapist before I give them an antidepressant. That would be unethical.

Other respondents had completely opposite perspectives of buprenorphine as a facilitator for addiction recovery. There was a sense of ambivalence, insecurity, and threat associated with MAT among abstinent-based community service providers. A general misunderstanding of harm reduction and physiological effects of MAT, specifically with buprenorphine, was noted among this group of respondents, as well as a sense of fear that traditional counseling services may be replaced. This example depicts how a lack of knowledge about MAT can lead to stigmatic beliefs about medications. A community service provider (#12) stated:

We are losing the whole purpose of the counseling piece and just prescribing these medications. Counseling is so limited with MAT. They came up with this idea of harm reduction, came in as harm reduction, but now, it's not harm reduction, it's treatment. We're saying, here, have eight milligrams of Suboxone three times a day, and as long as he's stable and not thinking about using, it's a great accomplishment. We're not treating the core of the problem, but the symptoms of it. Those are two things people really misunderstand and confuse. I have my own private practice, and I see people on Suboxone. But I let them know, listen, that day

you come in, I really don't want you to take it because I want you to be present with me. Medications usually numb people.

6.4 System Policies and Issues

Participants discussed three factors within this construct regarding the structure and context of treatment which included, treatment orientation, the Vivitrol pilot program, and Narcan.

Treatment orientation One of the policies that emerged was limitations on who receives MAT during incarceration period at Allegheny County Jail. "Non-pregnant women and men do not receive any form of MAT, and for women who are postpartum, they are tapered off of MAT in 4 to 6 weeks," noted a criminal justice respondent (#3). Pregnant women are prescribed either buprenorphine or methadone, and if they are not engaged in community-based MAT at the time of arrest, "most of the time we'll initiate it."

Furthermore, detainees are screened using a urine analysis. Because MAT is limited to expectant mothers, a criminal justice participant (#2) noted, "individuals admitted experiencing opiate withdrawal are observed in detox room and given comfort care type medication, like valium. We have a detox nurse that assesses for withdrawal symptoms using COWS (Clinical Opiate Withdrawal Scale)."

Following a clinical assessment, inmates are then transferred to the drug and alcohol pod (D & A) where they receive substance abuse treatment as noted by criminal justice worker (#3):

Services provided for inmates with SUDs are residential substance use treatment pods. So, for women, we probably see (18 to 20) at a time on a pod with groups and individual sessions. For men, probably (70-80) on the pod at a given time with

groups and individual sessions. There's a reentry drug and alcohol education class open to general population and substance use treatment pod.

While criminal justice respondents shared that there were ongoing NA and AA meetings offering in jail, discussions and information related to the use of MAT was limited to the counselor's knowledge and preferred practice, as evidence by criminal justice, participant #3, "I'll talk about MAT in groups, but it is not in the structure of the program. It depends on the knowledge of the counselor of MAT. Other counselors may not be as familiar with it." Although education on MAT seemed to vary, a public official (#11) was weary of denoting any service provided in the D&A pod as treatment:

So now, you're put up on the D&A pod and people get treatment. You'll hear the word treatment. I don't know how you do that when the jail is not a licensed treatment facility for substance use. There's a state regulatory body that licenses facilities, like a Gateway Rehab or any of these treatment centers. So, when we hear about treatment, it's kind of hog wash.

Vivitrol Inmates with pending release dates are afforded the option of receiving Vivitrol on their release day, a program that was taken up by reentry. "There's been a pilot since the fall of 2017, actually, to do Vivitrol that is paid for by the Pennsylvania Commission on Crime and Delinquency – so it's a special grant program." This program, in particular, was met with heavy criticism from a majority of respondents who denounced the policy effort as being in line with the "abstinent-based ideology of the criminal justice system." Among various respondents, one public official (#11) stated:

People like it in the CJS because it's not a controlled substance, it's a non-narcotic, non-opioid, and you do it once a month, people love it and think that's great. Right now, we don't really have the evidence to say we should or shouldn't do that stuff.

Other respondents noted systematic issues associated with how Vivitrol has "embedded and latched" itself onto the CJS as marketing themselves as a "blocker," not a drug. "It's easier to accept a blocker verses a Suboxone," said health care participant (#7). The majority, especially those in the health care field, saw this as a problem with a participant (#6) stating:

The problem is they've been very heavily lobbied and presented with evidence about the efficacy of naltrexone by the company that produces Vivitrol. And they've been sold as a bill of goods that this is a really effective treatment. It's not an opiate, you know, it really works. It's not divertible, it's not abusable. It'll prevent people from dying of an overdose. And in fact, a lot of the evidence really points in the opposite direction. The problem is when it wears off people don't want to go get another shot because they don't feel well on naltrexone, they continue to feel like they're in this chronic state of withdrawing craving.

Moreover, those in criminal justice noted how difficult it can sometimes be to retain returning citizens on Vivitrol. One criminal justice worker (#2) shared a story about how a client under community supervision avoided and continually made excuses to prolong receiving his monthly Vivitrol shot. "We all know he wanted to use so I told him, you're either getting the shot or you're going to jail…so that's how it goes." Others in the health care profession backed this statement, alluding to their professional experiences with having patients on Vivitrol. In particular, one participant (#7) stated:

Whenever patients on Vivitrol have broken, they get antsy. It's like right on the nose after week three. Some people will experience cravings and symptoms. Some people are like, let me try and break that barrier, and they'll start doing heroin when they know it's weaker. So, we've seen some of the pitfalls [of Vivitrol], it's harder for people to get on it. Some people have gotten precipitated withdrawal because you need to be detoxed off. And some people aren't always honest, and they start with ReVia, or they just give them the shot, and they weren't honest, and now they're in the ICU and withdraw, so it's not like catch-all type thing.

Among abstinent-based community stakeholders, one respondent (#12) identified Vivitrol as the "only treatment modality of all MATs" that could actually work without "interfering" with what needs to be on an internal, psychological level. He continued:

Vivitrol may be the most effective treatment because it's done once a month and it doesn't have the side effects of methadone or Suboxone, where a person will experience withdrawal symptoms or nod off on it. People still get to feel and go deep and talk about issues because you know, medication usually just numbs people.

Narcan Another option that is afforded to the pending releasees is the opportunity to be discharged with Narcan. In addition, prior to release, criminal justice workers reported that inmates do receive education about the risk of overdose, mentioning that there is "Narcan video which everyone watches in the jail," that details "steps" on how to use Narcan and maintain a "buddy system" at all times. Emergency medical personnel (#4), particularly, applauded the proactive policy efforts of initiating Narcan in ACJ prior to release as overdose rates have "decreased steadily as the community has been blanketed with Narcan." He continued, "we're probably down

about 60% from when we peaked in 2017 because of fentanyl…I'm still treating overdose victims 1 to 3 times a week, though." However, he was weary of the extension of that policy discussion merely ending with Narcan, stating that people still need to be connected with services that will aid community recovery efforts. The respondent went on provide information he had received from a homeless outreach coordinator that encapsulated his perspective on the matter:

> *He knew of 90 overdoses within past few months, and only 3 of them involved a call to 911—what that shows is that there is enough Narcan out in the community and people are carrying it and using it which is saving lives, which is fantastic, but then on my end, we're losing opportunities to connect with these people and a system and help get them into recovery services. It becomes a lost opportunity. It would be very easy for us to say the crisis is over—that's dangerous to say—and to start to roll back on all pressure we are putting on [rehab] programs, when in reality more people are using and more people are overdosing, but just not calling 911. They're just using smarter.*

6.5 Continuum of Care

Out of all constructs, respondents took up the most issue with the termination of all detainees' community-based MAT at jail entry, stating that the "forced detox process" not only disrupted "active recovery" and was "unethical," but placed a "huge liability" on the health system, warranting grounds for "lawsuit" cases. "We see a lot of people coming in with an overdose and a lot of them have been previously incarcerated at Allegheny County Jail—it's a significant

proportion," noted health care respondent (#6). Thus, health care professionals were the biggest proponents of advocating for health equity in the jail, stating:

> *Given the fact that one of the leading causes of death for people leaving jail is opioid overdose and that a lot of those people, a number of those people come into the jail on stable methadone or Suboxone and are taking off of it and denied that and then released without it, sort of puts some liability on the health system because we're kind of allowing it to happen. It's kind of like, you know, somebody comes in and says we don't believe in insulin. And you know, you're a diabetic and you come in on stable insulin and we remove the insulin and detoxify you. And you die. It's similar.*

Respondents among the criminal justice, EMS, and health care groups discussed their experiences with the discontinuity of medical services with their patients/clients upon incarceration, and how a "significant number" in recovery are "hamstrung" by this "misinformed" medical policy. Some respondents relayed issues encountered with detainees that came in with scripts for Suboxone. For example, another health care provider (#8) noted:

> *I know, firsthand, some of my patients had pending court dates where they knew they were probably going to go jail and have come back out and told us that they smuggled in their own Suboxone strips we prescribed, so I think it would cut down on that, especially knowing that medication would be continued during their incarceration period, particularly if its short. Patients have told me that they were in there for just a few days, and didn't want to get sick, so they knew that was the case, so they made it work.*

Perhaps, the most telling piece of information painted a picture of how many individuals may be potentially impacted by the forced withdrawal policy, as a respondent (#11) shared:

> *Over a 2-year period, between 2016 and 2017, we found that there were 500 some people who had been engaged in methadone maintenance in the 2-weeks prior to their incarceration, and about the same, maybe little bit more who had filled a prescription for suboxone, paid for by Medicaid or the County.*

However, from opposing perspective, because Allegheny County Jail is a central booking agency, there exists the barrier of "unpredictability" within the system, "making it difficult to either start or continue a MAT protocol." Other considerations highlighted that "maybe half or so leave within the first 30 days," and sometimes to other correctional facilities that may not provide MAT, "so you have to think about the beneficence of the client." The criminal justice respondent (#3) continued:

> *And so, thinking about the ethics of initiating someone on MAT and having to take them off because the detox and withdrawal symptoms would be worse. And that's a huge reason as to why we don't have MAT in the jail, because we don't know where they're going next – they can be transferred to Westmoreland County who may not have it (MAT) or upstate who doesn't have it.*

Nonetheless, for discharge planning purposes, efforts are made to coordinate for Vivitrol or Subutex (for pregnant women) when they are released. Criminal justice workers noted providing resources about Centers of Excellence in Allegheny County to inmates interested in engaging in community-based MAT, but explained the difficulty of coordinating post-release referrals.

"Because we don't have access to the system, a lot of times, our clients are gone and we don't know about it until the next day."

6.6 Probation and Drug Court

In regard to probation and drug court implications, participants discussed a strict abstinent-based approach taken by judges and magistrates that harbor "strong opinions against MAT," in that, it facilitates the continuation of an addiction. Respondents were also critical of criminal justice courts making medical decisions for drug court offenders with medical conditions, such as OUD. Some mentioned drug court officials being accepting of Vivitrol as "medical therapy because it's an opioid antagonist." Public officials and criminal justice workers noted this belief as being the "biggest barrier" towards establishing a jail-based MAT program, particularly because it eliminated the notion of introducing two other forms of MAT. In the following example, a public official (#10) alluded to the importance of turning out for elections given that some judges may have a strong foothold on policies that drive the county:

> *Judges are some of the most powerful people. I don't think we pay a lot of attention to who we elect when we elect judges. Judges make a lot of decisions and they really hold the future of a lot of people in their hands and there's nothing that says that they need to be using evidence-based practices or be public health experts, which is highly problematic.*

More systematic issues were highlighted in regard to managing an estimated 25,000 people who are on probation in the county. While the Allegheny County Jail inmate count may be high at certain times of the year, for those who are on probation and community supervision, the question

of linking probationers to community-based MAT undertakes a more complex scenario. One public official (#10) noted the complexity in breaking down the existing silos:

> *Even though there's a lot of momentum, there's a lot of interest and enthusiasm in wanting to do more, to do better, the existing systems are so rigid and hard to break down. I mention it because when people are released on probation, they may be getting drug tested and as far as I understand MAT, if you're on opioid replacement therapy, it's going to give you a positive test which could be in violation of your terms of release.*

Some participants framed their perceptions of drug court from the views that were communicated overtly, through public media outlets. For example, one respondent (#11) encouraged the googling of "Honorable Nauhaus Allegheny County drug court…you'll see his position on it. He refuses to have anyone in this court using MAT. Publicly stated. It's disgusting, but it's public." Another health care respondent (#7) noted the limitation of strict regulations that prevent patients from being "honest" about getting the treatment they want, like Suboxone, "one of my patients I just saw was very adamant about it. He said, I'm on federal probation. I don't want my judge to know that I'm even on Suboxone." Others shared similar experiences about their patients feeling like they need "permission" from their parole officers, however, encountered resistance, stating, "no, that is not part of the plan. Vivitrol only." Another respondent (#9) in the health care industry shared treatment complications encountered with another nearby county drug court:

> *I've seen that first hand with my patients. I even had a scenario with a patient in Butler County who was in drug court and they didn't allow her to be on Vivitrol,*

which is not even a controlled substance. I think the abstinence model is pushed in multiple realms, especially on the incarcerated population.

While participants highlighted the need to "educate" and change the negative perceptions associated with addiction and MAT in drug courts, other criminal justice workers more closely aligned with the innerworkings of Allegheny County drug court had a different take on the matter, suggesting, there was a misrepresentation of the Allegheny County drug court team approach. A criminal justice respondent (#1) noted that the perception of certain drug court judges may be responsible for swaying public opinion:

As a whole, I would say they are very informed on MATs, you know, there's several working parts to that program, but there's a lot of training that happens around MATs and the importance of MATs. So there is buy-in, overall, from the team, and we do currently have people who do participate in that program on MATs.

6.7 Logistical Issues

Cost and feasibility Criminal justice workers raised significant concerns related to the financial feasibility of integrating a jail-based MAT program into the county's tax funded budget. Some remarked on the price of medication as being "too expensive" in the general community, and alluding to the government as being primarily responsible for failing to resolve "one of the biggest health problems in this country at a reasonable price." And that is just the medication itself, "before you say yes, we'll do MAT, you have to consider the cost of contractors, doctors, pay for all their waivers, and consider other organizational logistics." A county official (#11) summarized the logistical cost of such a program:

What does it cost, per week, per month, and how long were they incarcerated? What would it cost to continue that treatment with about a minimum of 300 people needing that, maximum 600? It's probably closer to 600 people per year to treat with both, methadone or Suboxone. There's a 6fold, maybe 10fold difference in the price. And it's a lot of money, sure. You've got landslides, you've got development, water problems, all this stuff, you're really going to be put leadership in the jail to say we should do MAT on money we don't have?

Other participants (#10) responded similarly, stating that it would not make "cost sense" to start inmates on MAT because the "average length of stay" would not "commensurate with completing the course of treatment." In the following example, a criminal justice respondent (#3) addressed this concern and gave a brief synopsis of a potential scenario that could play out, even if Allegheny County Jail became a certified opioid treatment program at some point in the future:

Say, someone is on methadone and they are being held in ACJ, but have a hearing in Butler County. They would need to be transferred to Butler County part of the week, but they have no MAT over there, and even though we could technically have a partnership with Butler County, that would mean that someone from Butler County has to drive over every week that person is there to get their doses and that's just not happening. Butler County is not going to want to take on that cost and neither is Allegheny County.

In the case where a partnership could be established with a community methadone clinic, respondents noted concerns with "transport costs" that the Allegheny County Sherriff's Department would have to undertake on a daily basis. One respondent (#3) was particularly concerned with the lack of counseling time afforded to pregnant women in the jail receiving

methadone, "from a social justice perspective, 5 minutes of counseling is not effective." From the perspective of contracting a methadone clinic to come into the jail, a criminal justice respondent (#2) noted those challenges:

> *You'd have to contract with an outside provider, load up all the patients, load up all the medications, transport it in a box to a medical professional who's been cleared to do this. This is all federally regulated. Drive over to the jail, go through security, up to the D and A pod, open the case and dose every individual accordingly. Every single day that has to happen.*

Security and diversion Another barrier that emerged within this construct was the security concerns associated with the mixing of abstinent-based and MAT populations within a jail setting. Because general and treatment pods within the jail are gender-based, security and drug diversion implications may be further complicated if pods are not designated by treatment approach. A criminal justice participant (#3) shared their experience:

> *Within the substance abuse department, I advocate for MAT pregnant women to be in the substance use treatment pods, but I get a lot of resistance from other colleagues because the women might entice other inmates to use. It's not perfect. I mean they are a correctional institution and they are trying to manage high-security protocols, so that (drug diversion) definitely falls within their strongest arguments. They have to have an isolated pod.*

This statement was further supported by other community stakeholders who work closely with Allegheny County Jail, admitting that "Suboxone is very available on that pod…the women who I've had in there and who weren't on MAT, could have had it any day they wanted." The participant (#2) further elaborated on how the "fear" of creating a "black market" could potentially

"disrupt the community and cause fights," and how that would present a major security concern for all parties involved. Regardless, outsider perspectives from health care, public, and community provider participants continued to push the envelope and condemned correctional officials for interfering with an inmate's recovery solely based on security measures.

> *Medical decision-making, at least in this arena, are being made for security reasons and not for medical reasons. The warden is making medical decisions based on security. And that is the problem and it's really inappropriate. The problem is that we have to convince security staff and they're not listening.*

6.8 Partnership Limitations

Regarding partnership limitations, some community providers and criminal justice workers agreed that there is a lack of jail-to-community partnerships. One respondent (#2) indicated that a change in the abstinent-based ideology of the jail and drug court would further jeopardize community-based partnerships already in place, stating, "there aren't a lot MAT rehab facilities from what I've seen, especially those that could navigate someone [who is in jail] for three or four days." Criminal justice workers (#3) also acknowledged the strong relationships held with drug court and their preferred abstinent-based community partners, noting:

> *MAT would limit folks, especially like JRS, that use abstinent-based treatment centers. If we initiate MAT, they can't go to these centers anymore. So, you have to think of the partnerships that may be established with drug court in the county, too. That's a barrier in itself.*

Similar sentiments were shared between public and community provider participants. One (#11) shared a story about his conversation with a leader in a larger rehabilitation facility in the region, "she was explaining to me that the halfway staff that she works with adamantly refused to accept that someone could be in a halfway house using a medication. Period. Refused to accept and work with them." This example also depicts how stigma in recovery may be rooted in lack of knowledge about MAT, ultimately affecting the holistic receptivity of treatment. A medication-free provider (#12) who had maintained a community relationship with the jail shared his concerns, asserting:

> *They refer to us through drug court and probation. If the jail decides to move towards MAT, they're not going to send anybody. If somebody comes out of jail on Suboxone, we have to find a place for that person to go to for Suboxone because we're not a hospital. We don't have the ability to have Suboxone here in order for us to treat them.*

Other respondents brought awareness to the lack of partnership initiatives between their health provider center and the jail, noting that some of their referrals come from halfway homes that are open to Vivitrol. However, "there's no direct referral process" even though at some point, the health center did have a "peer navigator" go into ACJ. After the "long process" the navigator had to endure to just be able to establish some kind of presence in the jail, "he recently left and nobody has really picked up his role. So, you have to start all over again with clearances and things like that." Since then, the health care participant (#8) claims outreach efforts have been made to ACJ, but "it hasn't worked out." Another criminal justice worker's (#2) response correlated with this, stating that he has known community service providers who have "really tried hard" to establish a partnership with the jail and "they didn't succeed." Furthermore, this respondent went

on to outline challenging factors facing providers who may have an intention of forming a partnership with ACJ:

> *I guess it's the politics of it, of having somebody to have that amount of ability to navigate their system within their system to implement something of that capacity as an outside provider. The jail's a closed environment, so to have that level of trust, even for us, there's nobody else who could do what we do, to be able to go in there and navigate things. You have to have a relationship with the warden and treatment staff, have the history, experience with working in that system. All that kind of stuff – it's just a really, really difficult process. And if you don't have that history and experience with working in that system, to bring somebody new is next to impossible.*

Finally, EMS personnel indicated the dangers associated with released inmates who are then linked to stable housing, particularly in halfway homes where the majority of returning opiate-dependent offenders are placed. Because of the strict drug-free policy undertaken by the majority of transitional halfway houses, "regular urine analysis" are ongoing. Residents within this sober living community must then abide by the terms and conditions of the addiction recovery program. Thus, the "biggest predicament" cited was the need for returning citizens to seek alternative drugs that would not jeopardize their community housing. One positive test could result in a violation and immediate expulsion from the halfway home. The EMS participant (#4) went on to detail his encounters with such individuals:

> *A lot of the released inmates in these halfway homes turn to synthetic cannabinoids that they buy on the black market, like K2 or black spice. And so, those don't show up on your analysis, but because they're lab created and unregulated, there's a*

whole range of effects from like opioid toxidrome, to methamphetamine toxidrome with seizures, and so they're going unresponsive, and we don't have the benefit of having Narcan to help them with that. They cause injury to themselves, as well as our providers. If there was better access to MAT in the community, you'd see less of these dangerous choices people are making.

7.0 Discussion

The current study is the first, to our knowledge, to examine the perceptions, knowledge, and policies associated with MAT use among stakeholders who are, either directly or indirectly, involved with providing some level of service to previously incarcerated populations in Allegheny County. The survey and local context of the interviews illustrate systemic factors that affect the treatment processes associated with opiate-dependent offenders within the jail and in the community. The seven constructs previously discussed included: provider training and attitudes, system policies and issues, continuum of care, probation and drug court, logistical issues, partnership limitations, and facilitators.

In our study, the identified constructs can be framed as ecological factors within some of the nested systems. These systems include macrosystem (e.g., societal perceptions and attitudes, abstinent orientation, and educational training), exosystem (e.g., system policy, including its effect on the continuum of care, and logistical constraints), and mesosystem (e.g., community partnerships and probation and drug court programs). These broader ecological influences further underpin and expand upon NIDA's research-based guide on effective principals of drug addiction treatment, specifically, how societal perceptions, policy, and community agencies impact treatment delivery.

7.1 Macrosystem

For nearly all participants, social and internalized stigma associated with MAT was perceived as the most significant barrier in Allegheny County. Many cited to an impending political fallout if ACJ were to ever undertake a MAT program. This theme was strongly tied to their knowledge and perceptions of criminal justice institution's abstinent-based attitudes. Particularly, within ACJ, many noted the "substitute of one drug for another" mentality as being prevalent among the jail's administration. The prevalence of these attitudes and perceptions has previously been documented among corrections officials as main drivers for establishing a drug-free detoxification over MAT [91–93] . Correctional agency respondents within such study saw MAT as simply facilitating addiction, stating that it was "especially not appropriate for prisoners" [91]. Participants within the present study attributed this misperception to the lack of education among jail personnel [91]. This has also been cited in national surveys where over one third of 40 correctional respondents—when asked about methadone—gave either no response or were unsure of benefits associated with methadone [94]. Although the majority of participants appeared to be well-versed in MAT, a significant amount of uncertainty and stigma about MAT in the CJS represents an opportunity to educate and raise awareness about the efficacy of MAT as a recovery tool.

7.2 Exosystem

Policy All respondents but one directly highlighted and denounced Allegheny County Jail's forced opioid withdrawal policy, even for detainees with Suboxone scripts or currently on

community-based methadone maintenance. And for community-based patients who had not been sentenced, but anticipated such sanctions in the near future, more than two health care respondents discussed how ACJ's policy disrupted their patient's treatment plan. However, according a clinical guide for "detoxification of chemically dependent inmates," revised in 2018 by the Department of Justice, Federal Bureau of Prisons:

> "Inmates with short sentences, or with lengths of stay that are thirty days or less, generally should not be detoxified off benzodiazepines or barbiturates if these agents are currently medically indicated. However, opiate detoxification can be completed safely in less than two weeks. [However] Detoxification of inmates who have been using buprenorphine as maintenance therapy can be accomplished in an outpatient setting over several days." [95]

Therefore, no apparent state or national regulations appear to be in place preventing forced opiate detoxification from occurring within any correctional institution, including detainees coming in on MAT. Previous studies have weighed heavily on this policy's grave implications. A study conducted in Massachusetts and Rhode Island in 2012, found that nearly 50% of their study participants reported methadone detoxification as a deterrent to reengage in community treatment post-release [96]. These findings corroborated with Rich et al. study [97], citing that participants allowed to continue methadone during incarceration were more than twice as likely than the forced-detoxification group to reengage in community-based methadone treatment within a month of release. Other studies have cited to the subsequent aversion to MAT after being detained, indicating that they would rather withdraw from heroin than methadone [98]. In a more recent study conducted nationwide with 396 adults who had completed community treatment for OUD, posttreatment arrest was found to increase the likelihood of relapse [99].

Thus, forced correctional withdrawal policies in the CJS may seriously aggravate and deter a detainee in active recovery. Such policies not only disrupt the provision of evidence-based therapy, but violates eighth amendment protections against cruel and unusual punishment [8,100]. For example, denying inmates their insulin medication would be widely condemned as a constitutional violation. As such, limited access to MAT in the CJS warrants redressing this gap in care, that is both, health and human rights imperative.

Another policy limited MAT to expectant mothers within ACJ, helping to initiate MAT solely among this group, if not previously initiated in the community. This policy does fall within the rules and regulations of clinical guidelines of treating opiate-dependent pregnant women within the CJS [95]. However, contrary to SAMHSA's clinical recommendation for postpartum opioid treatment [101] and systematic reviews citing the postpartum period as a time of increased risk for discontinuation of MAT [102], ACJ does taper the individual off of their MAT, postpartum.

> "The risk of return to substance use is high in this case, and the woman should be advised that the change should not be made without a compelling reason. Every effort should be made to avoid premature discontinuation of agonist therapy." [101]

Furthermore, Allegheny County Jail has been running a Vivitrol pilot program since fall of 2017, which can be seen, to some, as a step forward in advancing the harm reduction movement. However, many respondents alluded to Vivitrol as being the medical version of forced abstinence within the CJS. They attributed Vivitrol's advancement in the CJS to the aggressive marketing tactics of Alkermes, the Massachusetts's based pharmaceutical company that manufactures Vivitrol. Only neutral and negative remarks about Vivitrol were discussed by all participants, with the

exception of one abstinence-inclined provider. Participants, particularly those in the health care field who shared their patient experiences, perceived Vivitrol as a worse alternative than remaining abstinent from any medication. Because Vivitrol is a relatively new medication—only approved by the FDA in 2010—it has been understudied, specifically with criminal justice populations.

However, a few studies have investigated outcomes with CJS populations [103], examined attitudes associated with using extended-release naltrexone [104], and presented precipitated opioid withdrawal case studies [105]. In 2012, Coviello et al. [103] conducted a study with probation and drug court populations that found that participants who completed a minimum of six-monthly injections of Vivitrol, 6 months after their last injection, reflected fewer positive urine tests for opioids than those that fell short of the 6-month shots. Contrary to participant beliefs about Vivitrol, a qualitative study conducted in Ukraine found that focus group participants indicated interest in Vivitrol if supervised opioid withdrawal and psychological support was guaranteed [104]. Furthermore, although preliminary findings do suggest Vivitrol as a promising new practice, more research is needed among criminal justice populations to validate its treatment efficacy.

Cost Although the cost-effectiveness of these medications, as they relate to reincarceration and opioid overdoses, are not well studied, literature does provide a basis for fiscal burdens imposed by arrests and incarceration [106]. In the state of Maryland, after adjusting costs for 2010, the estimated average cost of an arrest was estimated to be $4,568. This included arrest and investigation, booking, screening and pre-filing process, arraignment, pretrial hearings, and sentences. The cost of incarceration for one day was $89 [106]. Thus, the costs incurred by local government and associated departments appear to far exceed what maintaining someone on any form of MAT would cost. While other studies have shown that criminal justice

agencies run underfunded health care programs—largely due to the restrictions of Medicare and Medicaid for insuring anyone in U.S. jails and prisons [107]—a closer analysis at the financial feasibility of launching a jail-based MAT program is warranted. In 2018, NIDA provided a report of cost estimates associated with each FDA approved MAT [27]:

- Methadone treatment, including medication and integrated psychosocial and medical support services (assumes daily visits): $126.00 per week or $6,552.00 per year
- Buprenorphine for a stable patient provided in a certified OTP, including medication and twice-weekly visits: $115.00 per week or $5,980.00 per year
- Naltrexone provided in an OTP, including drug, drug administration, and related services: $1,176.50 per month or $14,112.00 per year [27]

Of course, within correctional settings, as previously mentioned by participants, one would have to also account for staff time, contractor costs, transportation, facility licenses, and waivers. However, when comparing the base cost of these medications to those associated with a single case of arrest, policymakers could be more proactive in addressing these missed opportunities for revenue. Unfortunately, while an estimated $115 billion was spent on the opioid crisis nationally in 2017 (over $50 billion in Pennsylvania in 2016), a study found that in 2013, only $2.8 billion was spent on SUD treatments in the United States [108].

Security and diversion Finally, the most frequently cited logistical barrier to initiating a jail-based MAT program in Allegheny County was security concerns related to potential drug diversion, as well as other structural implications. This finding falls well in line with previous nationwide surveys that documented barriers regarding both methadone and buprenorphine prescribing policies in correctional facilities [91–94]. One study found that even if the medical director favored the provision of MAT, significant resistance would be met from the administrative

body, most commonly citing security concerns [91]. This also corroborates with one of the participant's statements about medical policy being driven by security reasons.

Falling within the realm of security, criminal justice workers and abstinent-based providers cited the structural barrier of mixing abstinent populations with inmates on MAT. Some criminal justice respondents did not see a problem with this notion, but encountered resistance from other colleagues. Others mentioned the ready availability to spread such medications in ACJ's treatment pod and disrupt formerly established treatment protocols. A previous study noted similar findings among wardens that stated, "diversion would represent a loss of control and the possibility that inmates may get "high" or even overdose" [93]. Wardens noted this as a liability as well as a "public health, medical and public safety concern" [93].

7.3 Mesosystem

Community Partnerships As in other studies [92,94], respondents also cited the insufficient provision of MAT from community service providers as being a barrier. This can be further supported by the National Survey of Substance Abuse Treatment Services that found that in 2016, only 36% of SUD treatment programs offered at least one MAT for treating OUD [109]. Because ACJ uses two community providers for transitioning their pregnant women, little is known about their outreach and collaboration efforts with other community providers in Allegheny County. Nonetheless, respondents did provide insights about the difficult processes associated with establishing those partnerships, especially when accounting for historical relationships held between abstinent-based community providers and jail, probation, and drug

court entities. Furthermore, regardless of whether participants felt that MAT was beneficial or detrimental, nearly all cited halfway homes as being predominantly abstinent-based in Allegheny County.

These findings may be supported by a recent Allegheny County SUD provider survey (2016) that found that of 24 respondent organizations who participated, most (82%) offered MAT within their outpatient settings. Fifty percent offered Vivitrol or Oral Naltrexone, and 38% offered Suboxone. Halfway Houses within this survey had the lowest response count (3 or 13%) [86]. Although halfway houses are not obligated to provide medical care, many do provide substance abuse programming. Moreover, because a significant portion of returning citizens will pass through these transitional housing programs (many of which are abstinent-based) following jail release, it is imperative to ensure they are operating under evidence-based practice guidelines.

Probation and drug courts The majority of participants also emphasized their grievances about judges and magistrates enforcing their abstinent-based ideology on returning citizens who would become subsequent patients of theirs. Participants believed that the autonomy of the defendant and appropriate medical treatment of OUD should take precedence over any judge's bias and strong opinion against MATs. Such concerns have been previously shared in other studies [110,111]. In 2017, a study by the Physicians for Human Rights found that drug courts among three states were largely failing to provide medically informed treatment to those with OUD. In all cases observed within this study, nonmedical personnel assessed for OUD and some judges were identified as mandating treatment plans without consulting medical professionals [111]. Another study in New York State raised similar human rights concerns over drug court judges mandating defendants on stable methadone to be tapered off merely because they saw it is as the continuation

of addiction and deterrent to abstinence [110]. These misinformed, imposed regulations can stymie an opiate-dependent offender's engagement with MAT, even if he or she believes it to be effective in their personal recovery path.

Here, in Allegheny County, per an article published in the Pittsburgh Post-Gazette in 2018 and according to Common Pleas Senior Judge G. Nauhaus, "Suboxone, methadone, is just another addiction." The article goes on to state that with few exceptions, all drug court defendants in Allegheny County are required to remain abstinent and that others on medication have to agree to tapered off. Beyond a "Joint Position Statement on Medication-Assisted Treatment for Opioid Use Disorders in Allegheny County," that did not include Allegheny County Drug Court, no other public information is available on the county's drug court treatment orientation. Further, no stance on MAT is taken by the Administrative Office of Pennsylvania Courts (that oversee drug courts) or the Pennsylvania Association of Drug Court Professionals. This obviously presents a problem among 45 county drug courts in Pennsylvania that may enforce different rules.

Stakeholders' views on the lack of education on MAT among drug court officials also corroborated with another study as being a significant barrier. Matusow et al. [45] found that among the 46 drug courts who indicated operating under a strict drug-free order, incorrect information on the efficacy of buprenorphine and methadone were more pronounced. Moreover, contrary to previous MAT studies ascertaining its efficacious medical qualities, only 5% of drug court officials agreed that MATs use is more effective than non-pharmacological treatments for OUD, compared to 32% in drug courts where MATs were readily available [45]. This, again, points to gaps in information about the medical efficacy of MAT among seemingly educated court judges.

Other concerns were raised about the enormous undertaking it would be to shift a drug-free policy to pro-MAT when the county has about 25,000 on probation. The respondent elaborated on the potential for urine screenings to detect opiates in drug tests when on MAT. After reaching out to two criminal justice agents, one of which was not included in this study, it was relayed to me that the most common requested probation drug test used was the standard five-panel, which detects cocaine, marijuana, amphetamines, alcohol, PCP, and opiates. However, the agent clarified that even though methadone and buprenorphine have active opioid components, it would not result in a positive drug test. He stated, "some urine screens do list it as an opiate but most list Suboxone as Suboxone and methadone as methadone. Ours list it as Suboxone and methadone. Even in the case where it would come up positive for opioids, it would then be sent to a lab which with 99% certainty will list if it is buprenorphine or methadone." Thus, the only way to detect methadone or buprenorphine is to test for it specifically, which does appear to be the common practice in Allegheny County.

7.4 Facilitators and Recommendations

According to Allegheny County Jail's latest research report, "Changing Trends: An Analysis of the Allegheny County Jail Population," more than 80% (13,237 of 16,436 booked in 2011) of ACJ's population were male, nearly 50% White, with the largest incarcerated age-group of 25-34 (34% or 9,686) [112]. Although these statistics were reported for 2011, Allegheny County's most recent opioid-related death analysis identified similar markers for case fatalities in terms of general proportions. Further, the average length of stay for this year (2011) was 58 days, with a median of 10 days. Also, between 2006 and 2011, the most common ACJ booking was a

result of a new arrest, with 17% being transferred to another facility. Average length of stay for the transferred group was 86 days [112]. Moreover, as estimated by the criminal justice workers, somewhere between 60-70% of inmates pass through Allegheny County Jail with a SUD.

A supplemental report in 2014 found that only 19% of ACJ's population was charged with a violent crime, attributing the remaining 81% of bookings to drug, public order, and property offenses [113]. In light of these factors, there certainly exist opportunities to engage and/or continue an opiate-dependent offender's treatment regimen prior to or during detainment. Due to the overrepresentation of low-profile crimes and SUD rates at ACJ, decriminalization approaches such as the Sequential Intercept Model could serve as the best practice for intervening and diverting opiate-dependent offenders. The Sequential Intercept Model (SIM) provides a theoretical framework for diverting misdemeanor and low-level felony defendants from incarceration, into needed substance use treatment [114,115] . Using public health principals of prevention, the model posits that opportunities for treatment exist at different intersect points that diverge from traditional criminal justice procedures [115]. To best outline policy prescriptions and recommendations as they relate to Allegheny County, the SIM will be adapted to the following intercept points: law enforcement engagement and pre-arrest (Intercept 1), post-arrest, initial detention, court and hearings (Intercept 2), jail and drug court (Intercept 3), community reentry from jail (Intercept 4), probation and parole (Intercept 5).

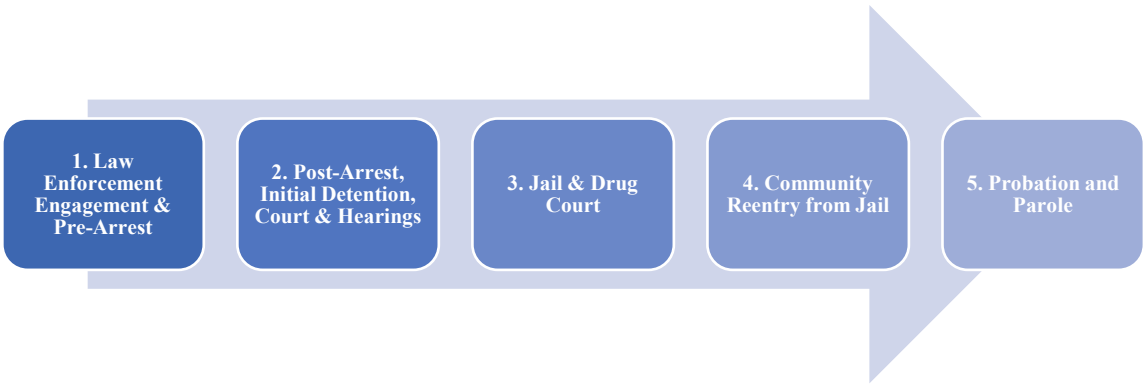

Figure 3. Criminal Justice Continuum Intercept Points

7.4.1 Intercept 1: Law Enforcement Engagement

While law enforcement officers are not trained to clinically assess and recommend treatment protocols, collaborating with community partners to conduct an overdose risk assessment and/or identify withdrawal symptoms associated with OUD, could bridge treatment gaps in the community. Building on this practice, a law enforcement-led initiative in Allegheny County could be established to divert opioid-dependent offenders to appropriate treatment service providers, prearrest. This would not only provide law enforcement with the opportunity to connect eligible offenders to treatment services, but avoid putting them under formal arrest procedures and stringent detox protocols.

Since 2007, Pittsburgh officers have been trained under the Crisis Intervention Team (CIT) model to assess for mental illness and divert these individuals to Pittsburgh Mercy's Central Recovery Center on the South Side, rather than incarcerate them. Similarly, in 2018, under a grant from the Pennsylvania Commission on Crime and Delinquency, a Post Overdose Response Team consisting of at least one police officer was formed. Under this model, PORT follows-up within a

week of an individual's overdose event and assists with coordinating for treatment services. Thus, with appropriate training and community partnering, platforms are in place to help divert opiate-dependent offenders to treatment. This community program approach would represent a more viable alternative to managing opiate-dependent offenders and minimizing associated risks with their arrest. These pre-booking diversion initiatives (e.g. Law Enforcement Assisted Diversion)—specifically designed for substance use identification—have currently been advanced in other cities [110–112].

7.4.2 Intercept 2: Post-Arrest and Court

As a general principal, during detainment period, eligible opiate-dependent offenders should be linked to community treatment as early as possible. Unfortunately, criminal court proceedings are underutilized events for establishing opioid overdose prevention protocols. In regard to arraignment procedures, the management and coordination of detainees and incarcerated opiate-dependent offenders should be of high priority. To address this, Allegheny County courts should collaborate with law enforcement officials, defense attorneys, prosecutors, and jails to modify booking procedures between time of arrest and arraignment to successfully assess and divert offenders at most risk for overdose. With appropriate consent, such legal protocols facilitate the streamlining of critical information about an offender's treatment needs, treatment history, and recent treatment engagement (if currently on MAT).

Additionally, in cases concerning brief detainment, jail policy should permit all detainees with active community-based MAT (e.g. methadone, Suboxone) involvement to continue their respective treatment regimens, regardless of facility transfer scenarios. In conjunction, because ACJ is a central booking agency, contracting a community partner to oversee opiate-dependent

detainees in the short-term (before their transition) could improve treatment coordination efforts and avoid forced detoxification protocols.

7.4.3 Intercept 3: Jail and Drug Court

During this pivotal intervention point, implementing a comprehensive overdose prevention program in tandem with MAT is critical. The Rhode Island Department of Corrections (RIDOC) was recently the first to implement such a program between its jail and prison populations. Many corrections officials from other states have since visited to learn more about their effective treatment model. Other national training efforts provided by the U.S. Department of Justice, Bureau of Justice Assistance, could also provide ACJ officials with a learning tool focused on implementing a continuum of care model to treat individuals with OUDs. Currently, use of a valid screening tool for OUD, traditional counseling, and naloxone education appears to be some of ACJ's strongest programming components. Prevention Point Pittsburgh, a nonprofit organization dedicated to providing health empowerment services to injection drug users, has undertaken much of the overdose prevention education and training at ACJ. In 2014, over 400 individuals received this training at ACJ [86]. However, due to the frequent jail lockdown protocols in the last couple of years (2017-2018), it has become difficult to consistently provide these trainings. Additionally, providing monthly jail staff trainings on MAT and further establishing this educational component in the structure of the jail's treatment pods, may bridge treatment gaps in holistic drug education among those incarcerated. Other similar advances could be made by creating an additional support network inclusive of medicated populations (e.g. Medication-Assisted Recovery Anonymous group).

As previously discussed, only a significantly small portion of ACJ's jail population (expectant mothers) receive any form of MAT. However, due to this treatment orientation, mechanisms are currently in place to facilitate and expand MAT options to other populations who may be incarcerated beyond 30 days. First, Allegheny Health Network is currently contracted to provide all medical and psychiatric services and have vocalized their support for providing training and waivers for the provision of buprenorphine. Current doctors in ACJ provide pregnant women with Subutex. Additionally, because Suboxone and Subutex are known to be more divertible than methadone, providing an extended-release injection of Sublocade may eliminate security concerns associated with diversion. Secondly, an established partnership also appears to be in place with a local methadone clinic for all pregnant women who are clinically cleared to engage in treatment. Thus, ongoing treatment and transport protocols could be revised to expand treatment access to larger populations.

In lieu of incarceration, other specialized diversion programs such as drug court, provide an organizational capacity to deliver timely evidence-based treatment to individuals living with OUD. Because Allegheny County drug court's stance on MAT is unclear, educational trainings for judges and prosecutors that convey the implications of withdrawing someone from evidence-based medication should be implemented. Thus, to avoid participant exclusion, drug court policy should be revised to permit opiate-dependent offenders to remain on or begin their maintenance medication during program. Furthermore, even though a Vivitrol pilot program has been in place since 2017 for all qualifying jail populations, a returning citizen's recovery path should never be influenced or enforced by ill-informed correctional and judicial entities.

7.4.4 Intercept 4: Community Reentry from Jail

The reentry period should facilitate the continuity of care between the jail and community behavioral health providers. Because the immediate post-release period is a critical period for all those involved in jail substance use treatment services, Allegheny County Jail policy should ensure proper referral and follow-up protocols for all those released with an OUD. In 2016, due to the alarming opioid-related overdose rates in Allegheny County, a "Risks and Opportunities for Intervention" report was released jointly by Department of Human Services and Department of Health. The report recommended evidence-based practices for Allegheny County Jail [86]:

1.Universally assess ACJ inmates for opioid use and overdose risk.

2.Provide naloxone to all inmates identified as using opiates and therefore at risk of overdose upon discharge from ACJ.

3.Deliver evidence-based treatments (such as MAT) to ACJ inmates with an identified opiate-use disorder.

4.Provide case management for those leaving ACJ and entering SUD treatment to improve rates of treatment, initiation and engagement. [86].

While advances have been made in these recommendations, such as dissemination of naloxone and use of COWS for clinically assessing for OUD at jail entry—as evidenced by participants in this study—improvements in case management for linking returning citizens to community recovery services still need to be refined. Both, Allegheny Health Network and University of Pittsburgh Medical Center (UPMC) have established centers of excellence. Other community behavioral health providers (e.g. Tadiso Inc., Jade Wellness Center, Gateway Rehab, Cove Forge, Pittsburgh Mercy) that provide various forms of MAT could build or strengthen their relationships with ACJ. Establishing stronger provider partnerships within the jail could improve

treatment planning efforts, effectively, reducing the extra work load burden of criminal justice workers within ACJ. Continuing to collaborate with Pittsburgh Prevention Point, post-release, may also provide returning citizens with a stable community safety net. Furthermore, developing a comprehensive network of health providers, behavioral health providers, and public safety partnerships (e.g. Allegheny County Police, City of Pittsburgh, Allegheny County Emergency Services), could substantially bridge service gaps and mitigate opioid-related overdose events among returning citizens.

7.4.5 Intercept 5: Probation and Parole

Given Allegheny County's high probation count, probation officers are in a unique position to supervise and support an offender's community treatment rehabilitation. In collaboration with community providers, frequent contact events between community corrections personnel and probationers can mitigate lapses in treatment and reinforce the client's recovery support network. Community research has found that factors influencing a returning citizen's relapse cycle included (1) exposure to drug use in halfway houses or shelters, (2) loneliness and isolation, and (3) strained family or interpersonal relationships [116]. Therefore, service providers and probation officers can ensure returning citizens have adequate housing, employment, educational, and social support. Moreover, it is critical that community corrections personnel support the returning citizen's treatment plan, including MAT as prescribed by appropriate treatment providers.

Furthermore, it is important to recognize Allegheny County's proactive efforts in mitigating the negative effects of the opioid epidemic in its community. In a Joint Position Statement on MAT for OUD, the Department of Human Services, Health Department, and other supportive organizations released a statement:

> "Nobody should be penalized or taken off MAT because of involvement with the criminal justice system. The decision to initiate and sustain recovery using MAT, as well as the decision to discontinue using MAT, is a medical decision made by an individual, a clinical team and a doctor. Discontinuation requires careful planning to ensure adequate treatment and ensure adequate treatment with a focus on recovery, overdose prevention and risk reduction. Criminal justice professionals are entitled to information about the individual's progress; however, it is never acceptable to order discontinuation of MAT as a condition of court supervision. Furthermore, federal funding for drug courts should be contingent upon the drug court utilizing MAT when clinically appropriate" [113].

In addition, "treatment providers that do not offer MAT as an option cannot be considered evidence-based providers" [113]. Because a substantial amount of concerns was raised among this study's participants about halfway homes deterring evidence-based practice of MAT, community efforts should target and edify recovery housing programs of the benefits of MAT as a sustainable recovery tool. Buy-in from managers, counselors, and medical staff of such programs is imperative for effective interventions among opiate-dependent returning citizens. Advocacy suggestions are available on the website of American Association for the Treatment of Opioid Dependence (http://www.aatod.org). Additionally, the Bureau of Justice Assistance in the Unites States Department of Justice has also published an important training tool "Residential Substance Abuse Treatment: Medication Assisted Treatment for Offender Populations". This comprehensive training tool provides guidance and in-depth recommendations on how proceed forward with initiating use of MAT for opioid addiction [114].

7.5 Limitations and Strengths

A major limitation of this study is that the sample size was small. Although a combination of purposive and snowball sampling was used, time constraints limited our ability provide a more diverse sample of participants. However, the sample size was sufficient for developing thematic constructs and guiding the related research questions of the study. Additionally, the design of the survey and semistructured interviews may have influenced response selection bias, especially among participants well-versed in the medical practice of MAT. Thus, the local context of perceptions and information shared by participants in this convenience sample may not be generalizable or representative of their agency. To a certain degree, saturation was reached with the data, however, because the sample size did not capture the majority of representative agencies in the county, we were careful not to rely solely on information provided by these respondents.

Furthermore, our study is the first to provide an in-depth perspective of stakeholders at different levels of influence within a local community currently being impacted by the national opioid epidemic. The qualitative nature of this study allows for participants' own words to illustrate challenges encountered as a result of local public policy. The study further integrates a community-based approach, offering policy makers and other relevant stakeholders' insightful considerations for improving public health practices, especially within Allegheny County Jail.

8.0 Conclusion

The current study highlights the need to address treatment gaps associated with health care policy among criminal justice institutions. Further, jail and community efforts to improve the delivery of MAT should be holistic in reducing the harmful effects of addiction with such vulnerable populations. In doing so, health literacy, compassion, and understanding should be increased and disseminated across the different systems (i.e., policy makers, general public, frontline service delivery professionals, criminal justice officials) while combatting negative and misinformed beliefs that perpetuate stigma.

Furthermore, given that jails have much higher turnover rates and shorter periods of incarceration than prisons, MAT patients who are detained would significantly benefit from the continuity of their treatment. In the absence of such evidence-based practices, including effective linkage to community recovery services, returning opiate-dependent citizens run a greater risk in harming themselves and the communities in which they return to. Therefore, preventative collaboration and revision in policy could substantially mitigate risks associated with recidivism, opioid relapse, and overdose in the immediate post-release period.

Appendix A Interview Guide

Interview Guide

- To your knowledge, what is the percentage of the jail's population with opioid or alcohol dependence?

- What are the populations provided with MAT (e.g. men/women, pregnant women, individuals infected with HIV)?
    - What is ACJ's treatment practice in the event that an individual is admitted experiencing opiate withdrawal?
    - What about for all individuals admitted who had been receiving community-based MAT prior to being detained?

- How does ACJ screen, assess, and triage individuals who may be potentially diagnosed with Opioid Use Disorder?
    - What services or programs are available to inmates who have a substance use disorder, specifically OUD?
    - How do you educate inmates about the risk of overdose and MAT practices?
    - How are medical staff, clinical staff, or other health care personnel trained to recognize and treat SUDs, withdrawal, and/or to utilize MAT?

- What specific Medication is currently available at ACJ?
    - How does ACJ administer/fund each specific MAT (e.g. contract personnel, own license, coordinate with outside clinics)?
    - What is the protocol for which type is dispensed to individual?
    - How involved is the individual in his treatment process and options?

- Following completion of treatment or when individual is being released (receiving MAT), what is the referral system ACJ use to connect inmates to community-based providers to maintain continuation of treatment?
    - Does ACJ provide assistance with enrolling inmates in health insurance plans (e.g. Medicaid) prior to release?
    - On release, do you dispense a limited supply of medications to inmate?
        - If so? How is coverage for medications following release coordinated?
    - What about for those under community correctional supervision, such as drug court clients, what is the process for connecting them to a community service provider that provides MAT?
    - What community reentry or aftercare services are provided, especially for those coming out of the ACJ's substance use services unit?

- Does Allegheny County Jail have any intention of applying for a SAMHSA certification to become a prison-based OTP (Opioid Treatment Program)?

    - Are there any plans to partner with a community OTP to open a medication unit in the prison while operating within the appropriate regulatory structure?
    - Likelihood that ACJ would expand MAT in the next 2 years to all jail populations?

- In your opinion, is it possible to expand use of MAT for opiate and alcohol addiction?
    - Do the forms of MAT currently being implement benefit opiate-dependent inmates?
    - How would user behavior change if all forms of MAT were initiated at ACJ to all jail populations?

Participants Outside of ACJ

- What's the biggest challenge [Line of Work/Service] face with regard to the opioid epidemic?
- In your line of work, what is the general sense [Line of Work/Service] get about Medication-Assisted Treatment or other harm reduction strategies? Are they informed or onboard with these treatment philosophies?
- What're the biggest barriers [Line of Work/Service] face with regard to preventing opioid-related overdoses among recently released inmates?
- What role do you see Allegheny County Jail playing in reducing the number of overdoses and/or substance abuse that occur within the county, specifically for those who are released eliciting opioid-dependent symptoms?

Appendix B Survey: Practices, Perceptions, and Barriers that Influence Allegheny County Jail's MAT Use

Practices, Perceptions, and Barriers that Influence Allegheny County Jail's MAT Use

Using a Likert-type scale where a rating of 1 indicates the factor is "Not important" and a rating of 5 indicates the factor is "Very important," ask respondent to rate the following factors, asking open-ended questions regarding all factors rated 4 or 5:

1. Negative Perception of MAT as a Substitute Drug
2. Jail, Probation, and Drug Courts Favor Drug-Free Treatment
3. Inadequate Info at Jail about MAT
4. Uninformed of Clinical Effectiveness for CJ Populations
5. Cost and Reimbursement Issues
6. Logistical Obstacles
7. Inconsistent with Jail's Treatment Philosophy
8. Liability Concerns
9. Limited Partnerships with CSPs
10. Physical Health Focus Over SUD Treatment
11. Administrative Opposition
12. Clinical Staff Object to MAT
13. Human Resource Limitation
14. Lack of Qualified Medical Staffing
15. Community Service Providers offer MAT
16. State/Local Regulations Prohibit Prescribing MAT
17. OUD is an Uncommon Problem in Jail

Bibliography

1. Olsen Y, Sharfstein JM. Chronic Pain, Addiction, and Zohydro. N Engl J Med. 2014;370(22):2061–3.
2. Bronson J, Ph D, Stroop J, Statisticians BJS, Zimmer S, Berzofsky M, et al. Drug Use , Dependence , and Abuse. Bur Justice Stat [Internet]. 2017;(June):1–27. Available from: https://www.bjs.gov/content/pub/pdf/dudaspji0709.pdf
3. Jones CM, Logan J, Gladden RM, Bohm MK, Author MPH. Vital Signs : Demographic and Substance Use Trends Among Heroin Users — United States , 2002 – 2013. Morb Mortal Wkly Rep. 2015;64(26):719–25.
4. Rudd RA, Seth P, David F, Scholl L. Increases in Drug and Opioid-Involved Overdose Deaths — United States, 2010–2015. MMWR Morb Mortal Wkly Rep [Internet]. 2016 Dec 30 [cited 2019 Feb 21];65(5051):1445–52. Available from: http://www.cdc.gov/mmwr/volumes/65/wr/mm655051e1.htm
5. Binswanger I, Stern M, Deyo R, Heagerty P, Cheadle A, Elmore J, et al. Release from Prison — A High Risk of Death for Former Inmates. N Engl J Med. 2007;356(2):157–65.
6. Marks JS, Turner N. The critical link between health care and jails. Health Aff. 2014;33(3):443–7.
7. Wideman TH, Zautra AJ, Edwards RR. Evidence-based practices for substance use disorders. Psychiatr Clin North Am. 2014;154(11):2262–5.
8. Linden M, Marullo S, Bone C, Barry DT, Bell K. Prisoners as patients: The opioid epidemic, medication-assisted treatment, and the eighth amendment. J Law, Med Ethics. 2018;46(2):252–67.
9. Glaze LE, Kaeble D, Programs O of J, Justice USD of. Correctional Populations in the United States, 2015. BJS Bull [Internet]. 2016;2000:8. Available from: file:///D:/PDF files for ProCite/cpus09.pdf
10. Lipari RN, Van Horn SL. Trends in substance use disorders among adults aged 18 or older. The CBHSQ Report. 2017.
11. Patel V, Chisholm D, Parikh R, Charlson FJ, Degenhardt L, Dua T, et al. Addressing the burden of mental, neurological, and substance use disorders: Key messages from Disease Control Priorities, 3rd edition. Lancet. 2016;387(10028):1672–85.
12. Park-lee E, Tice P. Key Substance Use and Mental Health Indicators in the United States : Results from the 2017 National Survey on Drug Use and Health. 2017.
13. Bahorik AL, Satre DD, Kline-simon AH, Weisner CM, Campbell CI. Alcohol, Cannabis, and Opioid Use Disorders, and Disease Burden in an Integrated Healthcare System. Addict Med. 2018;11(1):3–9.
14. Flanigan TP, Zaller N, Beckwith CG, Bazerman LB, Rana A, Gardner A, et al. Testing for HIV , Sexually Transmitted Infections , and Viral Hepatitis in Jails : Still a Missed Opportunity for Public Health and HIV Prevention. J Acquir Immune Defic Syndr. 2010;55:78–83.
15. Chitsaz E, Meyer JP, Krishnan A, Springer SA, Marcus R, Zaller N, et al. Contribution of Substance Use Disorders on HIV Treatment Outcomes and Antiretroviral Medication Adherence Among HIV-Infected Persons Entering Jail. AIDS Behav. 2013;

16. Jones CM. Heroin use and heroin use risk behaviors among nonmedical users of prescription opioid pain relievers – United States , 2002 – 2004 and 2008 – 2010. Drug Alcohol Depend [Internet]. 2013;132(1–2):95–100. Available from: http://dx.doi.org/10.1016/j.drugalcdep.2013.01.007
17. Krishnan A, Wickersham JA, Jordan AO, Zaller N, Altice FL. Post-Release Substance Abuse Outcomes Among HIV-Infected Jail Detainees : Results from a Multisite Study. AIDS Behav. 2013;
18. Nunn A, Zaller N, Dickman S, Trimbur C, Nijhawan A, Rich JD. in US Prison Systems : Results from a Nationwide Survey. Drug Alcohol Depend. 2010;105:83–8.
19. Winkelman TNA, Chang VW, Binswanger IA. Health, Polysubstance Use, and Criminal Justice Involvement Among Adults With Varying Levels of Opioid Use. JAMA Netw Open [Internet]. 2018;1(3):e180558. Available from: http://jamanetworkopen.jamanetwork.com/article.aspx?doi=10.1001/jamanetworkopen.2018.0558
20. Krawczyk N, Picher CE, Feder KA, Saloner B. Only one in Twenty Justice- Referred adults in specialty treatment for opioid use receive methadone or buprenorphine. Health Aff. 2017;36(12):2046–53.
21. Rich JD, Chandler R, Williams BA, Dumont D, Wang EA, Taxman FS, et al. How health care reform can transform the health of criminal justice-involved individuals. Health Aff. 2014;33(3):462–7.
22. Warner M., Trinidad J.P., Brigham A.B., Miniño A.M. HH. National Vital Statistics Reports Drugs Most Frequently Involved in Drug Overdose Deaths : Natl Vital Stat Rep. 2016;65(10):1–14.
23. Zeng Z. Jail Inmates in 2016. Bur Justice Stat [Internet]. 2018;(February):1–13. Available from: https://www.bjs.gov/content/pub/pdf/ji16.pdf
24. Carson EA. Prisoners in 2016 Summary. Bur Justice Stat [Internet]. 2016;1–36. Available from: www.bjs.gov.
25. Dumont DM, Brockmann B, Dickman S, Alexander N, Rich JD. Public Health and the Epidemic of Incarceration. Annu Rev Public Heal. 2012;
26. Wang EA, Hong CS, Shavit S, Sanders R, Kessell E, Kushel MB. Engaging Individuals Recently Released From Prison Into Primary Care : A Randomized Trial. Am J Public Health. 2012;102(9):22–9.
27. National Institute on Drug Abuse. Medications to Treat Opioid Use Disorder. 2017;(May). Available from: https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/21349-medications-to-treat-opioid-addiction.pdf
28. Fallon BM. The Key Extended Entry Program (KEEP): From the Community Side of the Bridge. Mt Sinai J Med. 2001;68.
29. Governments C of S. Report of the Reentry Policy Council: Charting the Safe and Successful Return of Prisoners to the Community . Rep Reentry Policy Counc. 2005;
30. Durose M, Cooper A, Snyder H. Recidivism of prisoners released in 30 states in 2005: Patterns from 2005 to 2010. US Dep Justice. 2014;Special Re(April):1–31.
31. Marlowe DB, Ph D. Integrating Substance Abuse Treatment and Criminal Justice Supervision. Sci Pract Perspect. 2003;(August):4–14.

32. Wildeman C, Wang EA. America : Equity and Equality in Health 4 Mass incarceration , public health , and widening inequality in the USA. Lancet [Internet]. 2017;389(10077):1464–74. Available from: http://dx.doi.org/10.1016/S0140-6736(17)30259-3
33. Binswanger IA, Nowels C, Corsi KF, Glanz J, Long J, Booth RE, et al. Return to drug use and overdose after release from prison: a qualitative study of risk and protective factors. Addict Sci Clin Pract [Internet]. 2012;7(1):3. Available from: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed14&NEWS=N&AN=366382619
34. Dasgupta N, Beletsky L, Ciccarone D. Opioid Crisis : No Easy Fix to Its Social and Economic Determinants. Am J Public Health. 2018;108(2):182–6.
35. Binswanger IA, Stern MF, Yamashita TE, Mueller SR, Baggett TP, Blatchford PJ. Washington State : A nested case control study. Addiction. 2017;111(3):499–510.
36. Pizzicato LN, Drake R, Domer-Shank R, Johnson CC, Viner KM. Beyond the walls: Risk factors for overdose mortality following release from the Philadelphia Department of Prisons. Drug Alcohol Depend [Internet]. 2018;189(April):108–15. Available from: https://doi.org/10.1016/j.drugalcdep.2018.04.034
37. Alex B, Weiss DB, Kaba F, Rosner Z, Lee D, Lim S, et al. Death After Jail Release: Matching to Improve Care Delivery. J Correct Heal Care. 2017;23(1):83–7.
38. Baker CD, James ST, Welch WF. An Assessment of Fatal and Nonfatal Opioid Overdoses in Massachusetts (2011 – 2015). The Commonwealth of Massachusetts. 2017.
39. Meit M, Megan Heffernan M, Erin Tanenbaum M, Topher Hoffmann M. Appalachian Diseases of Despair [Internet]. 2017. Available from: https://www.arc.gov/assets/research_reports/AppalachianDiseasesofDespairAugust2017.pdf
40. Moody LN, Satterwhite E, Bickel WK. Substance use in rural Central Appalachia: Current status and treatment considerations. J Rural Ment Heal [Internet]. 2017;41(2):123–35. Available from: http://doi.apa.org/getdoi.cfm?doi=10.1037/rmh0000064
41. Hedegaard H, Warner M, Miniño AM. Drug Overdose Deaths in the United States, 1999-2017. [Internet]. Centers for Disease Control and Prevention. 2017. Available from: http://www.ncbi.nlm.nih.gov/pubmed/29319475
42. Sanders S, Mullins C. 2016 WV Overdose Fatality Analysis: Healthcare Systems Utilization, Risk Factors, and Opportunities for Intervention [Internet]. West Virginia Bureau of Public Health. 2017. Available from: https://dhhr.wv.gov/bph/Documents/ODCP Reports 2017/2016 West Virginia Overdose Fatality Analysis_004302018.pdf
43. Ranapurwala SI, Shanahan ME, Alexandridis AA, Proescholdbell SK, Naumann RB, Edwards D, et al. Opioid overdose mortality among former North Carolina inmates: 2000-2015. Am J Public Health. 2018;108(9):1207–13.
44. Reimer J, Verthein U, Karow A, Schäfer I, Naber D, Haasen C. Physical and mental health in severe opioid-dependent patients within a randomized controlled maintenance treatment trial. Addiction. 2011;106(9):1647–55.
45. Matusow H, Rich J, Dumont D, Hardin C, Marlowe D, Rosenblum A. Medication Assisted Treatment in US Drug Courts: Results from a Nationwide Survey of Availability, Barriers and Attitudes. J Subst Abuse Treat. 2014;71(11):3831–40.

46. Fiscella K, Moore A, Engerman J, Meldrum S. Jail management of arrestees/inmates enrolled in community methadone maintenance programs. J Urban Heal. 2004;81(4):645–54.
47. Sharma A, O'Grady KE, Kelly SM, Gryczynski J, Mitchell SG, Schwartz RP. Pharmacotherapy for opioid dependence in jails and prisons: research review update and future directions. Subst Abuse Rehabil. 2016;7:27–40.
48. Tomasino V, Swanson AJ, Nolan J, Shuman HI. The Key Extended Entry Program (KEEP): a methadone treatment program for opiate-dependent inmates. Mt Sinai J Med [Internet]. 2001 Jan [cited 2019 Mar 18];68(1):14–20. Available from: http://www.ncbi.nlm.nih.gov/pubmed/11135501
49. National Sherrifs' Association, National Commission of Correctional Health Care. Jail-Based Medication-Assisted Treatment: Promising Practices, Guidelines, and Resources for the Field. 2018.
50. Green TC, Clarke J, Brinkley-Rubinstein L, Marshall BDL, Alexander-Scott N, Boss R, et al. Postincarceration fatal overdoses after implementing medications for addiction treatment in a statewide correctional system. JAMA Psychiatry [Internet]. 2018;75(4):405–7. Available from: http://archpsyc.jamanetwork.com/article.aspx?doi=10.1001/jamapsychiatry.2017.4614
51. Unger A, Metz V, Fischer G. Opioid Dependent and Pregnant: What Are the Best Options for Mothers and Neonates? Obstet Gynecol Int [Internet]. 2012;2012:1–6. Available from: http://www.hindawi.com/journals/ogi/2012/195954/
52. Department of Justice U, of Justice Programs O, Institute of Justice N, of Justice Assistance B, of Juvenile Justice O, Prevention D. Number and Types of Drug Courts. 2018;(May):1–2. Available from: https://www.ncjrs.gov/pdffiles1/nij/238527.pdf
53. Gallagher JR. Predicting criminal recidivism following drug court: Implications for drug court practice and policy advocacy. Vol. 35, Journal of Addictions and Offender Counseling. 2014. p. 15–29.
54. Wiley Periodicals I. NADCP supports MAT but questions lack of medication protocols. Alcohol Drug Abus Wkly. 2012;26(28).
55. Gallagher JR, Wahler EA, Lefebvre E, Paiano T, Carlton J, Woodward Miller J. Improving Graduation Rates in Drug Court Through Employment and Schooling Opportunities and Medication-Assisted Treatment (MAT). J Soc Serv Res [Internet]. 2018;44(3):343–9. Available from: https://doi.org/10.1080/01488376.2018.1472173
56. Medication-Assisted Treatment (MAT) | SAMHSA - Substance Abuse and Mental Health Services Administration [Internet]. Substance Abuse and Mental Health Services Administration. 2018 [cited 2019 Feb 14]. Available from: https://www.samhsa.gov/medication-assisted-treatment
57. Substance Abuse and Mental Health Administration. Adult Drug Courts and Medication-Assisted Treatment for Opioid Dependence Opioid Use and Dependence Disease Concept of Dependence. Br [Internet]. 2014;8(1):1–8. Available from: https://store.samhsa.gov/system/files/sma14-4852.pdf
58. National Institute on Drug Abuse. Principles of Drug Abuse Treatment for Criminal Justice Populations - A Research-Based Guide. J Drug Addict Educ Erad [Internet]. 2011;7(3):197–217. Available from: https://search.proquest.com/docview/1730027377?accountid=12507%0Ahttp://openurl.ac.uk/athens:mmu/?url_ver=Z39.88-

2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&sid=ProQ:ProQ%3Acriminaljusticeperiodicals&atitle=PRINCIPLES+OF+DRUG+ABUSE+TREATME
59. Woody GE, Pecoraro A. Medication-assisted treatment for opioid dependence: making a difference in prisons. F1000 Med Rep. 2011;3(January):3–5.
60. Lissa Dutra PD, Georgia Stathopoulou MA, Shawnee L. Basden MA, Teresa M. Leyro BA, Mark B. Powers PD, Michael W. Otto PD. A Meta-Analytic Review of Psychosocial Interventions for Substance Use Disorders. Am J Psychiatry. 2008;179–87.
61. Chandler RK, Fletcher BW, Volkow ND. Treating Drug Abuse and Addiction in the Criminal Justice System: Improving Public Health and Safety. JAMA Netw Open. 2010;301(2):183–90.
62. Baler RD, Volkow ND. Drug addiction: the neurobiology of disrupted self-control. Trends Mol Med. 2006;12(12):559–66.
63. Kosten TR, George TP. The Neurobiology of Opioid Dependence: Implications for Treatment. Sci Pract Perspect. 2002;13–20.
64. Connery HS. Medication-Assisted Treatment of Opioid Use and Future Directions. Harv Rev Psychiatry. 2015;63–75.
65. Delucchi KL, Masson C, Rosen A, Clark HW, Robillard H, Banys P, et al. Methadone Maintenance vs 180-Day Psychosocially Enriched Detoxification for Treatment of Opioid Dependence. JAMA Netw Open. 2000;283(10):1303–10.
66. Rp M, Breen C, Kimber J, Davoli M. Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence (Review). Cochrane Syst Rev. 2009;(3).
67. Veilleux JC, Colvin PJ, Anderson J, York C, Heinz AJ. Clinical Psychology Review A review of opioid dependence treatment : Pharmacological and psychosocial interventions to treat opioid addiction. Clin Psychol Rev [Internet]. 2010;30(2):155–66. Available from: http://dx.doi.org/10.1016/j.cpr.2009.10.006
68. Magura S, Lee JD, Hershberger J, Joseph H, Marsch L, Shropshire C, et al. Buprenorphine and methadone maintenance in jail and post-release : A randomized clinical trial. Drug Alcohol Depend. 2009;99:222–30.
69. Krupitsky E, Nunes E V, Ling W, Illeperuma A, Gastfriend DR, Silverman BL. Injectable extended-release naltrexone for opioid dependence : a double-blind , placebo-controlled , multicentre randomised trial. Lancet [Internet]. 2011;377(9776):1506–13. Available from: http://dx.doi.org/10.1016/S0140-6736(11)60358-9
70. Robertson AG, Swartz MS. Extended-release naltrexone and drug treatment courts: Policy and evidence for implementing an evidence-based treatment. J Subst Abuse Treat [Internet]. 2018;85:101–4. Available from: https://doi.org/10.1016/j.jsat.2017.02.016
71. Knudsen H, Fenster J, Urbine T, Mitchell SG, Welsh W, Abdel-Salam S, et al. A cluster randomized trial of an organizational linkage intervention for offenders with substance use disorders: study protocol. Heal Justice. 2013;1(1):1–11.
72. Rudes DS, Friedmann PD, Viglioni J, Willet J, James A, Gordon MS, et al. Community correctional agents' views of medication-assisted treatment: Examining their influence on treatment referrals and community supervision practices. Subst Abus. 2016;37(1):127–33.
73. Friedmann PD, Hoskinson R, Gordon M, Schwartz R, Kinlock T, Knight K, et al. Medication-assisted treatment in criminal justice agencies affiliated with the criminal justice-drug abuse treatment studies (CJ-DATS): Availability, barriers, and intentions. Subst Abus. 2012;33(1):9–18.

74. Kinlock TW, Gordon MS, Schwartz RP, O'Grady KE. A Study of Methadone Maintenance for Male Prisoners: 3-Month Postrelease Outcomes. Crim Justice Behav. 2008;35(1):34–47.
75. Brinkley-rubinstein L, Mckenzie M, Macmadu A, Larney S, Zaller N, Dauria E, et al. A randomized , open label trial of methadone continuation versus forced withdrawal in a combined US prison and jail : Findings at 12 months post- release. Drug Alcohol Depend [Internet]. 2018;184(August 2017):57–63. Available from: https://doi.org/10.1016/j.drugalcdep.2017.11.023
76. Magura S, Lee JD, Hershberger J, Joseph H, Marsch L, Shropshire C, et al. Buprenorphine and methadone maintenance in jail and post-release: A randomized clinical trial. Drug Alcohol Depend. 2009;99(1–3):222–30.
77. Lee JD, Friedmann PD, Kinlock TW, Nunes E V., Boney TY, Hoskinson RA, et al. Extended-Release Naltrexone to Prevent Opioid Relapse in Criminal Justice Offenders. N Engl J Med. 2016;374(13):1232–42.
78. Gisev N, Larney S, Kimber J, Burns L, Gibson A, Dobbins T, et al. Determining the impact of opioid substitution therapy upon mortality and recidivism among prisoners: A 22 year data linkage study. Aust Inst Criminol. 2015;(498).
79. Russolillo A, Moniruzzaman A, Somers JM. Methadone maintenance treatment and mortality in people with criminal convictions: A population-based retrospective cohort study from Canada. PLoS Med. 2018;15(7):1–19.
80. Heimer R, Catania H, Newman RG, Zambrano J, Brunet A, Ortiz AM. Methadone maintenance in prison: Evaluation of a pilot program in Puerto Rico. Drug Alcohol Depend. 2006;83(2):122–9.
81. Marsden J, Stillwell G, Jones H, Cooper A, Eastwood B, Farrell M, et al. Does exposure to opioid substitution treatment in prison reduce the risk of death after release? A national prospective observational study in England. Addiction. 2017;112(8):1408–18.
82. Deaths TO. Figure 1 . National Drug Overdose Deaths Number Among All Ages , by Gender , 1999-2017 Figure 2 . National Drug Overdose Deaths Number Among All Ages , 1999-2017. 2018;1–10.
83. Pittsburgh DPD and the U of. The Opioid Threat in Pennsylvania. 2018.
84. Hulsey E. Opioid-Related Overdose Deaths in Allegheny County , 2015 – 2016 Update. 2018.
85. Allegheny County Analytics. Allegheny County Data Warehouse – Allegheny County Analytics: Reports, Visualizations and Datasets [Internet]. [cited 2019 Feb 7]. Available from: https://www.alleghenycountyanalytics.us/index.php/dhs-data-warehouse/
86. Hulsey E. Opiate-Related Overdose Deaths in Allegheny County Risks and Opportunities for Intervention. 2016;(July).
87. Bahr SJ, Harris PE, Strobell JH, Taylor BM. An evaluation of a short-term drug treatment for jail inmates. Int J Offender Ther Comp Criminol. 2013;57(10):1275–96.
88. Allegheny County. Jail | Drug and Alcohol Programs | Allegheny County [Internet]. 2019 [cited 2019 Apr 24]. Available from: https://www.alleghenycounty.us/jail/drug-and-alcohol-programs.aspx
89. Averill JB. Matrix Analysis as a Complementary Analytic Strategy in Qualitative Inquiry. Qual Health Res. 2007;12(6):855–66.

90. Bronfenbrenner U. Ecological systems theory. In: Bronfenbrenner U, editor. Making human beings human: Bioecological perspectives on human development. Thousand Oaks, CA: Sage Publications Ltd.; 1992. p. 106–73.
91. Nunn A, Zaller N, Dickman S, Trimbur C, Nijhawan A, Rich JD. Methadone and Buprenorphine Prescribing and Referral Practices in US Prison Systems: Results from a Nationwide Survey. Drug Alcohol Depend. 2010;105:83–8.
92. Friedmann PD, Hoskinson R, Gordon M, Schwartz R, Kinlock T, Knight K, et al. Medication-assisted treatment in criminal justice agencies affiliated with the criminal justice-drug abuse treatment studies (CJ-DATS): Availability, barriers, and intentions. Subst Abus. 2012;33(1):9–18.
93. McKenzie M, Nunn A, Zaller ND, Bazazi AR, Rich JD. Overcoming obstacles to implementing methadone maintenance therapy for prisoners: implications for policy and practice. J Opioid Manag [Internet]. 2009;5(4):219–27. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2936228/pdf/nihms155566.pdf
94. Rich JD, Boutwell AE, Shield DC, Key RG, McKenzie M, Clarke JG, et al. Attitudes and practices regarding the use of methadone in US state and federal prisons. J Urban Heal. 2005;82(3):411–9.
95. Federal Bureau of Prisons. Detoxification of Chemically Dependent Inmates Federal Bureau of Prisons: Clinical Guidance. 2018;2018.
96. Fu JJ, Zaller ND, Yokell MA, Bazazi AR, Rich JD. Forced withdrawal from methadone maintenance therapy in criminal justice settings: A critical treatment barrier in the United States. J Subst Abuse Treat. 2013;44(5):502–5.
97. Rich JD, McKenzie M, Larney S, Wong JB, Tran L, Clarke J, et al. Methadone continuation versus forced withdrawal on incarceration in a combined US prison and jail: A randomised, open-label trial. Lancet [Internet]. 2015;386(9991):350–9. Available from: http://dx.doi.org/10.1016/S0140-6736(14)62338-2
98. Maradiaga JA, Nahvi S, Cunningham CO, Sanchez J, Fox AD. "I Kicked the Hard Way. I Got Incarcerated." Withdrawal from Methadone During Incarceration and Subsequent Aversion to Medication Assisted Treatments. J Subst Abuse Treat [Internet]. 2016;62:49–54. Available from: http://dx.doi.org/10.1016/j.jsat.2015.11.004
99. Kopak AM, Lawson SW, Hoffmann NG. Criminal Justice Contact and Relapse Among Patients Seeking Treatment for Opioid Use Disorder. J Drug Issues. 2018;48(1):134–47.
100. Bone C, Eysenbach L, Bell K, Barry DT. Our ethical obligation to treat opioid use disorder in prisons: A patient and physician's perspective. J Law, Med Ethics. 2018;46(2):268–71.
101. Substance Abuse and Mental Health Services Administration. Clinical Guidance for Treating Pregnant and Parenting Women With Opioid Use Disorder and Their Infants. Substance Abuse and Mental Health Administration. 2018.
102. Wilder C, Lewis D, Winhusen T. Medication assisted treatment discontinuation in pregnant and postpartum women with opioid use disorder. Drug Alcohol Depend [Internet]. 2015;149:225–31. Available from: http://dx.doi.org/10.1016/j.drugalcdep.2015.02.012
103. Coviello DM, Cornish JW, Lynch KG, Boney TY, Clark CA, Lee JD, et al. A multisite pilot study of extended-release injectable naltrexone treatment for previously opioid-dependent parolees and Probationers. Subst Abus. 2012;33(1):48–59.

104. Marcus R, Bojko MJ, Mazhnaya A, Makarenko I, Filippovych S, Dvoriak S, et al. A qualitative assessment of attitudes about and preferences for extended-release naltrexone, a new pharmacotherapy to treat opioid use disorders in Ukraine. J Subst Abuse Treat [Internet]. 2018;86:86–93. Available from: https://doi.org/10.1016/j.jsat.2018.01.003
105. Wightman RS, Nelson LS, Lee JD, Fox LM, Smith SW. Severe opioid withdrawal precipitated by Vivitrol®. Am J Emerg Med [Internet]. 2018;36(6):1128.e1-1128.e2. Available from: https://doi.org/10.1016/j.ajem.2018.03.052
106. Schwartz RP, Alexandre PK, Kelly SM, O'Grady KE, Gryczynski J, Jaffe JH. Interim versus standard methadone treatment: A benefit-cost analysis. J Subst Abuse Treat [Internet]. 2014;46(3):306–14. Available from: http://dx.doi.org/10.1016/j.jsat.2013.10.003
107. Fiscella K, Beletsky L, Wakeman SE. The Inmate Exception and Reform of Correctional Health Care. Am J Public Health. 2017;107(3):384–5.
108. Florence C, Luo F, Xu L, Zhou C. The Economic Burden of Prescription Opioid Overdose, Abuse and Dependence in the United States, 2013 HHS Public Access. Med Care [Internet]. 2018;54(10):901–6. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5975355/pdf/nihms966245.pdf
109. Knopf A. Most treatment programs in the U.S. don't offer medication for OUD: Study. Alcohol Drug Abus Wkly. 2019;31(3):1–3.
110. Csete J, Catania H. Methadone treatment providers' views of drug court policy and practice: A case study of New York State. Harm Reduct J. 2013;10(1):1–9.
111. Mollmann M, Physicians for Human Rights PHR. Neither Justice Nor Treatment Drug Courts in the United States Physicians for Human Rights. 2017;(June). Available from: http://pbpd.org.br/wp-content/uploads/2017/06/PHR_DrugCourts_Report-1.pdf
112. Zhou C, Kulick E, Grammich C, Dalton E. Changing Trends : An Analysis of the Allegheny County Jail Population. 2014;(September 2012).
113. CRIMINAL JUSTICE IN THE 21st CENTURY: ALLEGHENY COUNTY JAIL. Univ Pittsburgh Inst Polit Crim Justice Task Force. 2016;
114. Van Dorn RA, Desmarais SL, Rade CB, Burris EN, Cuddeback GS, Johnson KL, et al. Jail-to-community treatment continuum for adults with co-occurring substance use and mental disorders: Study protocol for a pilot randomized controlled trial. BioMed Cent Trials. 2017;18(1):1–12.
115. Munetz M, Griffin P. Use of the Sequential Intercept Model as an Approach to Decriminalization of People With Serious Mental Illness. Psychiatr Serv [Internet]. 2006;57(4). Available from: http://ps.psychiatryonline.org.ez.lib.jjay.cuny.edu/doi/pdf/10.1176/ps.2006.57.4.544
116. Fox AD, Maradiaga J, Weiss L, Sanchez J, Starrels JL, Cunningham CO. Release from incarceration, relapse to opioid use and the potential for buprenorphine maintenance treatment: a qualitative study of the perceptions of former inmates with opioid use disorder. Addict Sci Clin Pract. 2015;10:2.