

WHAT RESEARCH TELLS US

Effectiveness of Medication-Assisted Treatment in Criminal Justice Settings

There is overwhelming evidence that medication-assisted treatment (MAT) is an effective intervention for addressing opioid use disorders (OUDs) in criminal justice and non-criminal justice populations. Several meta-analyses and systematic reviews have focused specifically on its effects in probation, parole, jail, and prison settings.¹⁻¹¹

This chapter focuses primarily on the evidence base for the use of MAT with jail and prison populations and in community reentry after release.

Withdrawal and Cravings

Pharmacological benefits derived from the medications are well studied and well understood. Methadone and buprenorphine alleviate withdrawal symptoms and cravings for opioids by stimulating mu opioid nerve receptors in the brain.¹²⁻¹⁵ Because they bind preferentially to the receptors, they can diminish the effects of illicit opioids that may be used such as heroin.

A person who is physiologically tolerant to opioids will not experience intoxication, euphoria, or sedation when receiving these medications in the proper dosage, and most people can safely and effectively perform daily tasks, including childcare, many types of employment, and other nonhazardous activities.



Within this chapter, ratings are provided to indicate which outcomes are associated with the use of methadone, buprenorphine, oral naltrexone, and extended release (XR) naltrexone within the criminal justice system.

This chapter uses a three-tiered rating system for the evidence.



Reliable benefits

Effectiveness reported in at least two meta-analyses, systematic reviews, or randomized controlled trials conducted in criminal justice populations.



Potential benefits

Effectiveness reported in randomized experiments conducted outside of the criminal justice system or in correlational studies involving justice-involved persons.



Unproven benefits

Insufficient testing or unproven effectiveness.

Naltrexone, in contrast, binds preferentially to opioid receptors in the brain but does not stimulate those receptors.^{14, 16, 17} As such, it does not reduce withdrawal symptoms; in fact, introduction of naltrexone will precipitate withdrawal for persons who have not already been withdrawn from opioids. Oral naltrexone has no proven effects for reducing opioid cravings.¹⁸ However, the extended-release formulation has been shown to reduce cravings in randomized trials and brain-imaging studies conducted outside of the criminal justice system.¹⁹⁻²²



Withdrawal:



Methadone



Buprenorphine



Oral Naltrexone



XR-Naltrexone

Cravings:



Methadone



Buprenorphine



Oral Naltrexone



XR-Naltrexone

Treatment Entry and Retention

Methadone and buprenorphine are reliably proven to increase entry into and retention in treatment during incarceration and after release to the community.^{7, 9, 11} In contrast, meta-analyses have reported mixed or nonsignificant effects of oral and extended-release naltrexone on treatment entry and retention in criminal justice populations.^{1, 7} Observational reports in a few studies with methodological weaknesses suggest the extended-release formulation may potentially enhance treatment engagement among probationers or parolees in community-based settings,^{23, 24} however, these findings must be replicated in better controlled studies.



Methadone



Buprenorphine



Oral Naltrexone



XR-Naltrexone

Illicit Opioid Use

Methadone, buprenorphine, and extended-release naltrexone have been reliably demonstrated to reduce illicit opioid use in studies involving jail, prison, probation, and parole populations.^{1, 2, 7} Much of the support for buprenorphine comes from head-to-head comparisons with methadone in which drug use outcomes were determined to be equivalent.^{7, 25, 26} Although oral naltrexone was found in one randomized experiment to significantly reduce opioid-positive drug tests among federal probationers,²⁷ most studies have failed to find significant effects on drug use, largely as a result of poor medication compliance and high treatment dropout rates.²⁸⁻³⁰



Methadone



Buprenorphine



Oral Naltrexone



XR-Naltrexone

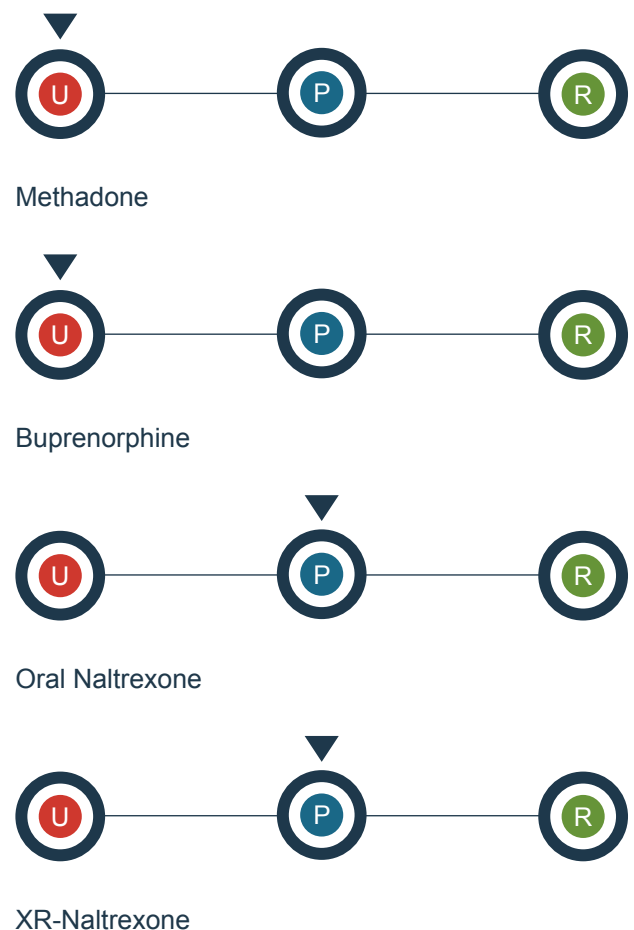
Criminal Recidivism

Studies employing suitable comparison groups have not found reliable effects from methadone or buprenorphine on criminal justice outcomes, including re-arrest rates, re-conviction rates, reincarceration rates, or self-reported criminal activity.^{3-8, 10, 11} Nevertheless, retention in methadone or buprenorphine treatment is often correlated with significantly lower rates of criminal activity.³¹⁻³⁵ This finding suggests that methadone or buprenorphine may elicit indirect effects on crime by enhancing treatment engagement and reducing illicit opioid use.

Further studies are needed to determine whether increasing retention and adherence in methadone or buprenorphine treatment leads to more consistent improvements in criminal justice outcomes.

The effects of naltrexone on criminal recidivism have been more promising, but mixed. Four meta-analyses reported significant reductions in re-arrest or reincarceration rates for naltrexone without differentiating between delivery in the form of pills, extended-release injections, or implants.^{1-3, 8}

However, a 2019 meta-analysis concluded that too few studies employing adequate methodologies have been conducted to reach firm conclusions about the effects on crime.⁷ A recent multi-site randomized controlled trial found no effects of injectable naltrexone on re-arrest rates, average numbers of re-arrests, or average time to the first new arrest over an approximately 18-month follow-up period.³⁶ Additional research is needed to determine whether naltrexone produces reliable effects on crime, and whether enhancing adherence to naltrexone regimens leads to greater reductions in criminal recidivism.



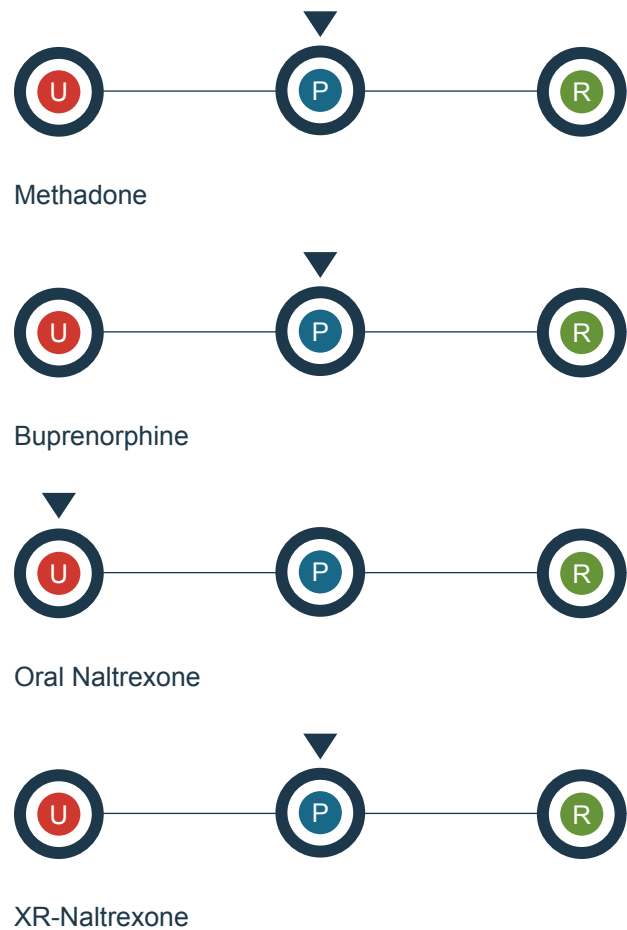
Overdose Risk

Studies employing equivalent comparison groups have not found reliable effects from administering methadone or buprenorphine during incarceration on post-release overdose rates.^{7, 10} However, strong correlational evidence indicates that providing methadone or buprenorphine both during custody and after release to the community is associated with substantially lower rates of opioid overdose and mortality.^{9, 33, 37-41}

Significant reductions in mortality have only been observed when participants received methadone or buprenorphine beginning in custody and continuing for at least four consecutive weeks after release to the community.^{39, 42} Any protective effects that might be achieved from prison or jail-based treatment appear to degrade quickly if methadone or buprenorphine are not delivered continuously in the community.

Further studies using better experimental designs are needed to confirm whether providing methadone or buprenorphine during and after release from custody reliably reduces opioid overdose and death rates.

Comparatively less research has examined the effects of naltrexone on opioid overdose and mortality rates. Two recent meta-analyses concluded there were too few studies to estimate an effect size on overdose rates.^{7, 43} However, a multi-site randomized controlled trial reported a significantly lower overdose rate for participants on community-based criminal justice supervision receiving injectable naltrexone.⁴⁴ Additional studies are needed to replicate this finding and determine how best to administer naltrexone to reduce opioid overdose and mortality rates



Health Risk Behaviors

Relatively few studies have examined the effects of MAT on other health risk behaviors commonly observed among persons with OUDs in the criminal justice system, such as syringe sharing or unprotected sex with multiple sex partners. Correlational evidence suggests that provision of methadone during custody and after release to the community is associated with significantly lower rates of injection drug use and contraction of communicable diseases.^{7, 9, 33}

Meta-analyses have also concluded that combining methadone with psychosocial counseling designed to reduce health risk behaviors significantly reduced syringe sharing, sexual risk behaviors and contraction of communicable diseases among recently released jail and prison inmates.^{45, 46} Less research has examined the effects of buprenorphine or naltrexone on health risk behaviors. One randomized experiment conducted outside of the criminal justice system found significantly lower rates of self-reported HIV risk behaviors for persons receiving injectable naltrexone.²⁰ More research is needed to confirm the effects of MAT on health risk behaviors associated with opioid use and determine what additional psychosocial interventions are needed to augment or maintain them.



Which Medication is Better?

Head-to-head comparisons between the medications have been largely inconclusive. A few studies conducted in the criminal justice system found no differences in opioid-use outcomes when methadone was compared against buprenorphine or extended-release (XR) naltrexone.^{8, 25, 47} Studies conducted outside of the criminal justice system have similarly found no differences in drug use outcomes for buprenorphine versus methadone²⁶ or XR-naltrexone.^{19, 22}

Some evidence suggests methadone may be superior to buprenorphine for retaining people longer in treatment.^{26, 48} However, studies conducted in the criminal justice system have not reported this finding.^{25, 49} Studies comparing XR-naltrexone to buprenorphine outside of the criminal justice system have reported mixed effects on treatment entry and retention. One experimental study reported equivalent retention in treatment,¹⁹ whereas another found that significantly fewer participants began treatment with XR-naltrexone.²²

Differences in the benefit profiles of the medications might suggest—but are by no means conclusive—that methadone or buprenorphine may be more effective than naltrexone for retaining persons suffering from severe withdrawal symptoms in treatment, whereas XR-naltrexone may be more effective for reducing crime among those at high risk for recidivism. Lacking any direct evidence to support such matching effects, these are hypotheses that must be tested in controlled studies.

Evidence does suggest that if a person is not responding adequately to one of the medications, changing the regimen can lead to more effective outcomes. One study conducted outside of the criminal justice system found that individuals not responding to buprenorphine could be switched effectively to methadone.⁵⁰

Choice of Medications

Medical practitioners must take a multitude of factors into account when deciding which medication to use in a given case. The likelihood of therapeutic success and dangerous side effects can be influenced by a host of variables. These include, but are not limited to, the following:⁵¹

- **person's medication preference** and motivation for change
- **age at onset**, duration, and severity of opioid use
- **other substances**, if any, used in conjunction with opioids
- **co-occurring** psychiatric or medical conditions, if any
- prior history of and response to **substance use disorder treatment**
- prior history of and **response to MAT**
- **family history** of mental health and/or substance use conditions
- other **prescription medications** being taken by the person

Non-medically trained criminal justice professionals should never make medication decisions related to MAT.^{52, 53}

Overlooking these factors and selecting the wrong medication can have dire consequences, including an unwarranted risk of dangerous medication reactions, treatment dropout, and overdose death.

Blanket prohibitions against MAT or against certain medications, such as methadone or buprenorphine, are medically unjustified and potentially harmful. Requiring inmates to discontinue or change a medication regimen that was previously successful is associated with poor outcomes and a lower likelihood of resuming MAT after release from custody.⁵⁴ Worse, because physiological tolerance to opioids declines during forced abstinence or while taking naltrexone, inmates required to withdraw involuntarily from methadone or buprenorphine face a substantially increased risk of overdose and death if they discontinue treatment upon release and resume illicit opioid use.^{37, 48}



Best Practices for Medication-Assisted Treatment in the Criminal Justice System

Several practices have been reliably associated with positive MAT outcomes in criminal justice and non-criminal justice populations. Failure to abide by these practices can undermine the effectiveness of MAT and worsen outcomes.

No justification exists for denying access to MAT because psychosocial services are unavailable or individuals are unwilling to avail themselves of those services.



Counseling and Social Services

The importance of psychosocial counseling in treating OUDs appears to be a matter of timing. In the early stages of treatment, when individuals are clinically unstable and experiencing withdrawal symptoms or drug cravings, medication alone may be adequate to enhance treatment retention and initiate abstinence from illicit opioids.^{48, 55, 56}

Several studies in community-based OTPs and physician practices found no incremental benefits from adding evidence-based counseling to MAT on treatment retention or illicit opioid use during the first 3 to 12 months of treatment.⁵⁷⁻⁶⁰ No justification exists, therefore, for denying access to MAT because psychosocial services are unavailable, or individuals are unwilling to avail themselves of those services. For many individuals, MAT alone may be enough to begin them on the road to recovery.

For most people, however, MAT alone is unlikely to produce sustained recovery or healthy adaptive functioning over the long run. Approximately 35-75 percent of individuals, including those involved in the criminal justice system, discontinue methadone, buprenorphine or naltrexone within the first year of treatment, often within the first few months.^{48, 61-63} Counseling is needed, therefore, to maintain persons' initial motivation for change and assist them in identifying and resolving barriers to treatment adherence.⁴⁸

As reviewed earlier, more research is needed to understand whether MAT produces demonstrable effects in criminal justice populations on important "secondary" or distal outcomes, including criminal and health risk behaviors. Combining MAT with psychosocial counseling produces larger and more sustained effects in these critically important psychosocial domains.^{45, 46, 64-67} Unfortunately, little is known about which types of psychosocial interventions produce better outcomes in combination with MAT, and when they should be introduced in the course of treatment.⁶⁶



Medication Dosage

Institutional policies limiting the dosage or duration of MAT are unwarranted and likely to undermine treatment effectiveness. Like any medication, methadone, buprenorphine, and naltrexone must be delivered in an adequate dosage and for a long enough time to achieve the desired pharmacological effects. Some studies in jails and prisons have reported average methadone doses of approximately 30 to 50 mg per day over brief intervals of a few weeks to about 6 months; however, significant improvements have typically only been reported when doses exceeded 60 mg (and often higher than that) over several months to more than a year.^{9, 48}



Medication Duration and Tapering

Evidence is clear that long-term or indefinite treatment with medications for OUDs is often required for effective and sustained outcomes.⁴⁸ In practice, successful tapers from methadone or buprenorphine typically occur in only about 15 percent of cases, the likely result of premature or unwarranted discontinuation of the medication regimens.^{51, 68} Administering MAT for 90 days or less, which is common practice in many jails and prisons, offers no beneficial effects.⁵¹ According to the U.S. Surgeon General, successful tapers typically occur, if at all, when individuals have been treated with MAT for at least 3 years.⁶⁹

Certain clinical benchmarks for success should be reached before considering a medication taper. Evidence in general community treatment settings suggests that individuals should be abstinent from all illicit drugs and alcohol and stable with respect to their physical and mental health, vocational and educational needs, and family problems for at least one to two years before beginning to taper a methadone or buprenorphine regimen.^{64, 70-72}



Because naltrexone is nonaddictive and has relatively minimal side effects, fewer concerns are commonly expressed about tapering a naltrexone regimen. Some experts recommend maintaining individuals on naltrexone for at least one year;^{17, 73} however, some have been treated successfully on naltrexone for at least five years with no negative effects.⁷⁴



Co-Occurring Mental Health Disorders

Approximately 15-20 percent of individuals on probation, parolees, and jail and prison inmates suffer from a serious or persistent mental health disorder.^{75, 76} Individuals with mental health disorders fail disproportionately on probation and parole, and co-occurring mental illness interferes significantly with the effectiveness of correctional substance use treatment programs.⁷⁷ When mental illness is combined with substance misuse, the odds of criminal recidivism and failure in correctional rehabilitation appear to increase multiplicatively.^{78, 79}

Substance use and mental health disorders are reciprocally aggravating conditions, meaning that continued symptoms of one disorder are likely to precipitate relapse in the other.^{80, 81} For example, a person recovering from drug addiction who continues to experience depressive symptoms has an elevated risk for relapsing to drug use. Conversely, a person recovering from depression who continues to use illicit drugs is likely to experience a resurgence of depressive symptoms.



For this reason, co-occurring mental health and substance use disorders should be treated concurrently as opposed to consecutively.^{82, 83} Whenever possible, both disorders should be treated in the same facility by an interdisciplinary team using an integrated treatment model that focuses on the mutually aggravating effects of the two conditions. SAMHSA has published therapist toolkits to assist in delivering evidence-based integrated treatments for co-occurring substance use and mental health disorders.⁸⁴

Participants should also have unhindered access to medical providers qualified to prescribe and monitor response to psychiatric medications and ensure those medications are used safely and effectively in combination with MAT for OUDs. A statewide study of community-based treatment reported that use of MAT was associated with significant reductions in inpatient substance use treatment for individuals with co-occurring disorders and use of oral naltrexone was associated with significant reductions in inpatient mental health days, greater adherence to psychiatric medications, and lower re-arrest rates.⁸⁵



Post-Release Services

Success after release from custody requires the individual to continue receiving MAT, counseling, and other indicated services in the community.⁶⁵ Institutional treatment alone without follow-up care is rarely successful. Worse, because physiological tolerance declines if individuals are not maintained on methadone or buprenorphine while incarcerated, release to the community without follow-up care can lead to higher rates of opioid overdose and mortality if they return to pre-incarceration levels of opioid use.^{33, 37}

The factor that best distinguishes effective from ineffective prison and jail-based MAT programs is whether participants experience a smooth

transition to follow-up care while on parole or after release to the community.^{7, 9} Systematic reviews of the research literature have concluded that significant reductions in criminal recidivism and improvements in employment are typically observed for post-release reentry programs that share at least the following characteristics:⁸⁶⁻⁹⁰

- Community providers meet with participants prior to their release from custody to assess their treatment and social-service needs, inform them about available community services, and develop a transitional treatment plan to ensure seamless receipt of indicated services after discharge.
- Community-based services are delivered immediately upon release, are intensive in nature (at least 8 hours per week), and last for at least six months.
- Participants receive at least a four-week supply or prescription (and preferably longer) of needed medications.
- Counseling interventions are documented in treatment manuals, are behavioral or cognitive-behavioral in orientation, and are delivered by professionally trained service providers.
- Participants receive evidence-based housing, vocational, and mental health services, where indicated.
- Supervision officers monitor participants' progress, use motivational enhancement techniques to increase compliance with treatment, reward achievement of treatment goals, and administer gradually escalating consequences (short of reincarceration) for treatment attrition or other infractions that do not involve a new criminal offense.

Preventing Misuse

Criminal justice professionals have an important role to play in minimizing misuse of medications. These concerns are usually most pressing after participants have been released from custody and are taking the medications in the community. Several practical precautions have been demonstrated empirically to reduce untoward events related to MAT.⁹¹⁻⁹⁴



Observed Administration

One of the most effective ways to prevent misuse or diversion of prescription medications is to require the medication to be ingested under the direct observation of treatment or criminal justice staff. After release from custody, ingestion may be observed by a medical staff person, probation officer, clinical case manager, or other approved individual such as a trusted, sober, and prosocial family member or friend.



Medication Level Monitoring

The presence of prescribed medications or their metabolites may be monitored through urine or other appropriate testing methods on a random basis to confirm the medication is being taken reliably.



Pill Counts

If take-home doses are permitted, participants may be called back on a random basis for pill counts to confirm the medication is being taken as prescribed. A short pill count may indicate the medication is being taken too often or in excessive doses or is being sold or traded illegally. A high pill count indicates it is not being taken as prescribed.



Medication Event Monitoring

A medication event monitoring system (MEMS) is a medication vial or cap with a microprocessor that records the date and time and the number of pills removed each time the container is opened. Use of a MEMS provides a reliable indicator of appropriate medication use among individuals with severe mental health disorders.⁹⁵ However, it has not been evaluated in a criminal justice population.

Newer applications designed for smart phones or other electronic devices offer more sophisticated methods for monitoring and enhancing medication adherence. Phone-based applications, for example, can deliver medication reminders and motivational prompts and use facial recognition technology to confirm ingestion in real time. Studies confirm that use of such applications can enhance adherence to psychiatric and other medications.^{96,97} However, these methods need to be examined in criminal justice populations.



Abuse-Deterrence Formulations

Misuse and diversion of medications has been reduced significantly by combining buprenorphine with naloxone (which elicits withdrawal if the medication is injected), administering the long-acting injectable formulation of naltrexone, administering methadone in liquid form, and administering buprenorphine in the form of a soluble sublingual film.



Prescription Drug Monitoring Programs

Prescription drug monitoring programs (PDMPs) are state-maintained databases of specified medications prescribed within the state and other jurisdictions with reporting reciprocity.⁹⁸ Reports typically include a list of prescriptions for controlled medications filled for a given individual within the previous 12 months.

As of April 2019, all U.S. states other than Missouri, as well as the District of Columbia, Guam and Puerto Rico, had a PDMP. Nearly all jurisdictions permit pharmacists, physicians and/or other medical practitioners (e.g., nurse practitioners) to access PDMP information relating to their patients or clients. In addition, most states and territories authorize PDMP reports to be communicated to law enforcement personnel, and approximately one-third authorize reports to community corrections agencies or drug courts.⁹⁹

PDMP monitoring has been shown to reduce the incidence of dangerous medication interactions by bringing other medications taken by patients to the attention of prescribing physicians and dispensing pharmacies.¹⁰⁰

Statewide studies have found that requiring mandatory reporting to PDMPs was associated with significant improvements in physician prescribing practices, including fewer individuals receiving overlapping prescriptions for the same opioid, obtaining opioids from five or more doctors or pharmacies (“doctor shopping”), or receiving refill authorizations of seven or more months.¹⁰¹⁻¹⁰⁴ A recent study concluded that implementation of mandatory reporting to PDMPs was associated with a 3-4 percent decrease in overall crime rates and a 5-7 percent decrease in violent crime rates.¹⁰⁵

Most studies have reported significantly lower rates of opioid misuse and opioid-related mortality after implementation of mandatory PDMPs.¹⁰⁶⁻¹⁰⁸ However, a few studies have paradoxically reported increased use of heroin or other illicit opiates in response to the reduced availability of pharmaceutical opioids.^{109, 110} Programs should, therefore, monitor participants continually for the possible emergence of other substances and take suitable measures to address the issue should it arise.

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