

Michigan Overdose Data to Action

The Center for Behavioral Health and Justice (CBHJ) at the Wayne State University School of Social Work envisions communities where research, data, and best practices are used by multiple stakeholders to enhance the optimal wellbeing of individuals with mental illness and/or substance use disorders who encounter the criminal-legal system.

The overdose crisis is a complex social problem that is often intertwined with criminal/legal systems. Therefore, research and support staff from several of the CBHJ initiatives worked collaboratively to generate, collect, translate, link, and analyze data regarding overdose prevention and response in Michigan. The policy briefs below reflect the objectives and activities completed by the CBHJ as part of the Michigan Overdose Data to Action (MODA) team, which is funded by the Michigan Department of Health and Human Services (MDHHS) via the Centers for Disease Control and Prevention (CDC). They are divided into two broad areas – <u>Harm Reduction and Overdose Prevention</u> and <u>Overdose Data to Action</u> – with three briefs in each of these areas.

Harm Reduction and Overdose Prevention

Harm reduction is a philosophy that guides strategies towards individuals or groups that aim to reduce the harms associated with certain behaviors. As a public health strategy, harm reduction was initially developed for persons who use drugs to help each other survive when abstinence was not feasible. Programs using a harm reduction philosophy have been successful in reducing morbidity and mortality among drug users and have also shown benefits for HIV, teen pregnancy, alcohol use, among other social problems. When applied to substance use disorders, harm reduction accepts that a continuing level of drug use (both licit and illicit) in society is inevitable and defines objectives as reducing adverse consequences related to these activities, including overdose. <u>Strategies</u> focus on keeping people safe and alive by avoiding judgments and fighting the stigma and prejudice that can prevent people from seeking the services they need. There is a commitment to the rights and autonomy of people who use drugs, and supporting any positive change in behavior, as defined by the individual.

As part of the MODA funding from MDHHS the CBHJ completed three major activities. In **Harm Reduction Training for Peer Recovery Coaches** we describe our efforts to build capacity for harm reduction training and shared strategies for use among peer recovery coaches. In **Harm Reduction-Based Naloxone Distribution** we provide a feasibility study on a truly innovative idea: the distribution of naloxone through vending machines. We describe local efforts to implement these machines in county jails and harm reduction settings in Michigan. Finally, in **Fentanyl in Rural Michigan** we conduct polydrug analysis on accidental overdose deaths that occurred in nearly a dozen rural counties to reveal that, while methamphetamine deaths are increasing, they are almost exclusively tied to fentanyl. We provide information and resources on fentanyl testing strips.

Overdose Data to Action

Bringing data to action is part of the CBHJ's mission. We help stakeholders from a variety of disciplines make sense of complex, often disconnected data so that they can access programs, evaluate outcomes, and make real-time data driven decisions. Erin Comartin, CBHJ Data Director, is an expert in local jail data systems and leads the CBHJ Data Team in navigating the complexities of more than two dozen unique data management systems in Michigan. This team has extensive experience integrating data across desperate systems to inform <u>behavioral health services for those in criminal-legal settings</u>. To inform policy in action we build on existing partnerships and expertise to integrate overdose and related-date elements both at the county and individual level.



WAYNE STATE UNIVERSITY School of Social Work Center for Behavioral Health and Justice

As part of the MODA funding from MDHHS the CBHJ completed three activities aimed at bringing data to action. In Opioid Treatment Ecosystems in County Jails we describe survey results from local jails and illustrate the near total lack of treatment or best-practices for OUD in these settings along with recent research on the risks that this presents for fatal overdose. We highlight the best practices that are integrated in the CBHJ MOUD in jail model and provide stakeholders with the tool to assess these practices. In Quantifying Overdose Prevention Touchpoints in Michigan, we build on existing data integration efforts at the CBHJ to determine the prevalence of two key overdose touchpoints: incarceration and nonfatal overdose. Much of the effort here has focused on facilitating and organizing the data integration, and while we report on these preliminary findings here, analysis of these integrated data is ongoing. Finally, in Michigan Overdose Data to Action County Scorecard we aim to extend current CBHJ efforts at assessing county-level factors that are associated with the incarceration of persons with behavioral health disorders to those factors associated with overdose. We use CDC bestpractices on overdose prevention as a framework to operationalize and identify data points across Michigan counties.



Harm Reduction Training for Peer Recovery Coaches

Peer recovery coaches (PRCs) are people currently or formerly living with substance use disorder (SUD) and/or mental illness who serve as a guide and resource to those entering recovery. PRCs often help clients address and overcome barriers to recovery by providing access to treatment resources and services. Research indicates that PRC services are associated with positive outcomes among clients, such as reduced recidivism, reduced hospitalization and increased adherence to treatment resources.^{1–8} Many states have developed a PRC training and certification process to better integrate this workforce into behavioral health systems to bridge clinical and community services. In a <u>recent study</u> CBHJ researchers explored the role of PRCs in the creation of a reentry program for inmates with SUD, and this revealed that PRCs reported a desire for more training focused on harm reduction in the context of SUD.⁹

To address this gap, the CBHJ partnered with Pam Werner (Manager of the MDHHS <u>Peer Specialist and Recovery Coach</u> <u>Initiative</u>) and Deb Monroe (Recovery Concepts of Michigan) to integrate harm reduction into PRC training. <u>Maya Doe-</u> <u>Simkins</u> (background in public health and infectious disease prevention and has trained and written curricula for various audiences) and <u>Valery Shuman</u> (licensed clinical professional counselor and board-certified art therapist with a speciality in substance use and harm reduction) provided the harm reduction training along with guest speakers for "deep dives." The team developed a train-the-trainer approach that started as three large introductory training sessions; 3 hours each with 81 trainees total, focused on integrating harm reduction concepts and strategies into day-to-day work with clients.

CBHJ researchers conducted observations and surveys to understand the training effectiveness. Post-training <u>survey</u> results showed that introductory training participants had mostly positive feelings about to the trainers, the content, and their likelihood to recommend others. The main critique was that trainings were not long enough. Observations made by CBHJ researchers echoed this criticism as trainees often ran out time because of discussion and sharing. The key strengths of the training were the dialogue it provided around non-abstinence-based recovery, sometimes allowing for this conversation to carry into the PRC agencies, and to provide harm reduction strategies that help can pave multiple pathways to recovery.

From the introductory training, "champions" were identified. These Champions, who conducted trainings themselves, engaged in bi-weekly sessions for 16-weeks focused on tangible harm reduction strategies. Champions made connections with harm reduction-informed practitioners in the field to understand their daily work, build capacity and to have support to conduct future harm reduction trainings in their communities. Pre-training <u>survey results</u> for the Champions series showed that PRCs had various amounts of previous training and familiarity with harm reduction entering the training.

In order to facilitate the ongoing evaluation of harm reduction trainings to PRCs the CBHJ also developed a pre-post <u>survey tool</u>. The CBHJ worked with stakeholders and trainers to identify the <u>harm reduction acceptability scale (HRAS</u>), a validated tool with 25 Likert-items (ranging from strongly disagree to strongly agree) which measures a respondent's openness to harm reduction concepts and practices. ^{10,11} In addition to utilizing the survey to evaluate ongoing Champions sessions, the survey has been modified for implementation by the Michigan Department of Corrections.



Harm-Reduction Based Naloxone Distribution

Naloxone is an opioid antagonist that can be administered intravenously, intramuscularly, subcutaneously or intranasally. It displaces and blocks opioid agonists from receptor sites, effectively reversing an opioid overdose (12). Its effectiveness has been well established (13), with few adverse events following administration (14). Rising rates of opioid-related overdoses have led to growing efforts to distribute naloxone in community settings (15,16).

Incarceration has emerged as a life-threatening risk factor for overdose, especially for those with opioid use disorder (OUD). <u>Research from CBHJ</u> suggests that more than one in five overdose deaths in the community are recently released jail detainees (17–21). Jails serve a unique opportunity to intervene for those with OUD to mitigate the risk of death following release (22,23); however, while detainees leaving jail may not have a disorder their peers might use opioids providing an opportunity for them to intervene and reverse an overdose with naloxone.

The CBHJ developed a <u>toolkit</u> to guide jails in building and expanding existing naloxone distribution programs and describe the safety and effectiveness of naloxone, explore strategies to provide overdose prevention training and distribute naloxone kits to jail detainees, and provide resources to procure and track distribution of naloxone kits. In partnership with MODA the CBHJ has been able to pilot a potentially high impact strategy for naloxone distribution: <u>vending machines</u>.

Partnering with local harm reductions agencies and with feedback from persons in active use who are seeking naloxone, we have developed a customized vending machine with <u>Shaffer Distributing</u> out of Livonia, Michigan that can distribute naloxone for free. These machines have the payment mechanism removed and the coils customized for small harm reduction packets that can fit two intranasal naloxone cartridges along with other sanitary and health products. Each vending machine is able to hold 300 naloxone kits.



The harm reduction packets containing naloxone are customized by the specific "stocking agency" who is responsible for refilling the machine. The stockers include harm reduction agencies, community mental health centers, local non-profits, and treatment providers. Research suggests that there is no difference in the ability to successfully reverse an overdose via naloxone among those who have received training and those who have not (24). However, to assure that persons receiving the naloxone are provided with access to training, each naloxone packet also contains information on how to administer naloxone, where to obtain more, and where to access treatment provided via <u>OpiRescue</u>, an online application and website (25).

Naloxone vending machines allow free, anonymous access to naloxone and removes the stigma often associated with obtaining naloxone. Through the CBHJ partnerships with jail facilities, and because of the high risk for overdose at release, vending machines have been implemented in several county jail facilities. However, future iterations of these efforts will seek to identify locations where these machines can reach additional high-risk populations. Naloxone is a key tool in the overdose epidemic. Using a harm reduction philosophy, we aim to reduce barriers and respect the rights and autonomy of people who use drugs by meeting them where they are at and supporting any positive change.





Fentanyl in Rural Michigan

The overdose epidemic remains one of the most pressing public health issues, with more than a half million deaths in the US over the past decade and nearly 100,000 deaths in 2020 alone (26). Most of these deaths are opioid involved, though the type of opioid has varied across multiple waves, each one resulting in more deaths than the last. Increases in overdose deaths initially began with the increased availability of prescription opioids (27,28). As the availability of prescription opioids decreased, a second wave of overdose was initiated as opioid users transitioned to heroin (27,29,30) and then beginning in 2013, the third wave of the overdose epidemic was driven by fentanyl, a synthetic opioid 50 to 100 times more potent than morphine (31,32). The most recent trends in national overdose data suggest sharp increases in deaths associated with synthetic stimulants, cocaine and methamphetamines (33), which some have labeled as the fourth wave of the epidemic (34).

This return to methamphetamines has been <u>highlighted in Michigan</u>, particularly among populations in criminal-legal systems, with research showing stimulants more likely to be detected through urine testing than opioids (35). However, drugs being seized or detected by law enforcement are not always the same substances detected in overdose deaths. To examine this the CBHJ partnered with the <u>Mid Michigan Medical Examiner Group</u> to examine postmortem toxicology results from overdose deaths that occurred between January 1, 2018 and December 31, 2020 in 11 rural counties (Alpena, Clare, Crawford, Lake, Mecosta, Montcalm, Montmorency, Newaygo, Oceana, Ostego, and Wexford).



Among 107 deaths that occurred over the three-year period we examined the detection of fentanyl, heroin, prescription opioids, cocaine, methamphetamine, and benzodiazepines. As illustrated in Figure 1, fentanyl was overwhelmingly the most common substance detected. There was a 94% increase during the three-year period, with fentanyl present in 70% of all the deaths in these counties in 2020. Prescription opioids detection also increased from 2019 to 2020, from 24% to 28%. Cocaine presence decreased from 28% in 2018 to only 8% in 2020 while methamphetamine detection increased from 18% in 2018 to about 30% in 2019 and 2020. Benzodiazepines decreased from 36% in 2018 to 20% in 2020.





While historical trends suggest opioids and stimulants alternate in periods of use, current patterns suggest polydrug couse among these substances along with instances of dealers cutting heroin and other illicit substances with fentanyl (36). Therefore, consistent with national data we found that stimulants are rarely detected outside of polydrug combinations that contain fentanyl. In fact, of the deaths we examined where cocaine was detected, 69% also contained fentanyl as did 77% of deaths with methamphetamine detected.

Figure 2 illustrates the polydrug detections among these substances across each year that data were collected. The thickness of each line represents the frequency of occurrences between connected drugs for a given year. The node size represents the frequency of each specific drug. Thus, the thicker line, the more frequent the occurrence of certain polydrug combinations. Each line can be compared across years to examine changing frequencies of unique polydrug combinations. As illustrated here, in rural Michigan fentanyl has been the dominant substance in overdose deaths since 2019, first in combination with methamphetamine and more recently alone, as fentanyl was detected without any of these substances in 28% of the 2020 cases.



Figure 2: Polydrug Detections in Rural Michigan (2018-2020)

The lack of a "safe supply" is driving overdose increases, as illicit opioid users have shifted from prescription medications, to heroin, to heroin (and potentially other substances) cut with fentanyl. The federal government approved the purchase of "fentanyl testing strips" which allows someone to place a small amount of the drug sample in a small container, add water, and swirl the testing strip in the sample for about 15 seconds. After 2 minutes, a red line may appear on the strip which indicates the presence of fentanyl. You can watch a <u>brief video</u> and <u>download printable instructions</u>; contact the CBHJ for information on ordering the test strips.

Drug checking can provide people who use drugs the ability to identify the presence of fentanyl in unregulated drugs. Testing strips can be applied broadly to drugs that are injectable, powder or pills. <u>Being aware if fentanyl is present is a powerful overdose prevention tool</u> and allows people to implement appropriate harm reduction strategies to reduce the risk of an overdose (37–39).





Opioid Treatment Ecosystem

The three <u>medications</u> approved for the treatment of opioid use disorder (OUD) in the US include methadone, buprenorphine/Suboxone,[®] and naltrexone/Vivitrol.[®] Despite the overwhelming evidence that using medications to treat OUD is the current gold standard of care (40–45), and that providing these medications can dramatically reduce overdose deaths (46), most jail facilities have considerable gaps in the provision of these evidence-based services, with now dated estimates (2017) showing that less than one percent of jails provide any form of OUD treatment, and even fewer provide all three FDA-approved medications (47).

In 2020, MDHHS completed a survey of 80 jail and lock-up facilities in Michigan. Results illustrated the complexities of measuring the integration of these mediations for opioid use disorder (MOUD) into jail facilities as many only provided specific medications to certain populations (i.e., methadone to pregnant females, naltrexone at release). Moreover, few undertake the additional practice of <u>screening</u> detainees for potential OUD to provide new medication inductions or facilitating treatment connections upon release (48).

The Opioid Treatment Ecosystem (OTE) is a technical assistance framework aimed at strengthening community-based OUD treatment at the intersection of criminal-legal systems. A key part of this ecosystem is the implementation of MOUD in local jail settings. The CBHJ developed the "OTE MOUD in Jail Model" to guide jails and community partners in program planning and implementation of best-practices for OUD treatment in jail-settings.



Figure 1: Opioid Treatment Ecosystem In-Jail MOUD Treatment Model

As illustrated in Figure 1, the OTE MOUD in Jail Model includes the implementation of a standardized screening tool at booking, all three FDA approved medications, psychosocial services, and discharge planning (Figure 1). . Of the 80 jail facilities surveyed in Michigan only 9.6% (n=8) adhered to the practices outlined in the model, and of 7 facilities, 5 received OTE technical assistance from the Center for Behavioral Health and Justice (CBHJ) to get there (see Figure 2).





Figure 2: Map of counties that self-report adherence to the MOUD in Jail model and receive technical assistance

To implement the OTE MOUD in Jail Model the CBHJ facilitates local Change Teams with criminal-legal stakeholders and community-based providers aimed at systems, attitudinal, and cultural change around substance use disorder. The Change Teams are based off the <u>Network for the Improvement of Addiction Treatment (NIATx</u>) studies (49–51), an evidence-based approach for implementing services in jail settings. Each county team is integrated into a statewide <u>Community of Practice</u> that brings stakeholders together from across the state to distribute training materials and policy briefs via webinars and an online newsletter.

Fidelity to the OTE model is tracked via a monthly 13-item <u>assessment</u> to identify the key program components that have been implemented. Once a jail has received a score of 12 out of 13 for two consecutive assessments, the CBHJ assists in the development of a program sustainability plan that is required for program certification and includes a presentation of outcomes to the Board of County Commissioners, <u>local media coverage</u>, and recognition with a printed award and tokens of appreciation.

Integrating MOUD, along with these additional practices, has the potential avert suffering, discrimination, and lawsuits in county jail facilities and can also contribute to sizeable reductions in overdose deaths in the surrounding community.





Quantifying Overdose Prevention Touchpoints in Michigan

In an effort to inform policy and practices in Michigan the Center for Behavioral Health and Justice (CBHJ) sought to quantify overdose rates at two touchpoints: **incarceration in county jail** and **a resuscitation from emergency medical services.** Incarceration has emerged as a life-threatening risk factor for overdose, especially for those with opioid use disorder (OUD). Research from the CBHJ <u>suggests</u> that more than one in five overdose deaths in the community are recently released jail detainees (17–21). Additionally, several studies have highlighted the risk of fatal overdose following a non-fatal overdose event (52), which has sparked the development of numerous post overdose response programs (53).

To examine our first touchpoint, incarceration, we used booking and release data from multiple time periods, which varied across 11 jail facilities in Michigan, between 1/5/2018 and 6/8/2021. This includes records on 13,805 detainees, with follow-up data on mortality from vital records. While the date range for release varied by facility, our preliminary analysis focuses only on 30 days, 60 days, 90 days and 365 days post release. As shown in Table 1, during the 365-day follow-up period there were 178 deaths (1.29% of all detainees); of which 30.90% were overdose related. The overall overdose-rate 365 days post-release was 0.40% or 400 per 100,000 which is 16.39 times the state overdose rate. This rate varied significantly by jail facility, with three having no overdose deaths and the facility with the highest rate at 0.524%. Table 1 displays prevalence for mortality at 30, 60, and 90-day time points as well.

Table 1. Mortality among returning citizens by time points post-release (N=13,805)

	•		
	Deaths	Overdose-related deaths	
At 30 days post-release	21 (0.15%)	6 (0.04%)	
At 60 days post-release	40 (0.29%)	16 (0.12%)	
At 90 days post-release	55 (0.40%)	22 (0.16%)	
At 365 days post-release	178 (1.29%)	55 (0.40%)	

Note. Time points are cumulative categories, e.g. sum of deaths at 60 days post-release necessarily includes deaths at 30 days post-release; ICD-10 codes for underlying causes of death X40-44, X60-64, X85, Y10-14 were considered overdose-related deaths per CDC guidelines (https://www.cdc.gov/drugoverdose/pdf/pdo_guide_to_icd-9-cm_and_icd-10_codes-a.pdf).

The second touchpoint looked at non-fatal overdose responses through emergency medical services (EMS). Here we used data from a large metropolitan area in Michigan where we record linked to vital records naloxone administrations by EMS over an approximately 29-month period (January 1st, 2018, through June 9th, 2020). This included 5,825 non-fatal overdoses among 4,690 successfully resuscitated patients, and excluded those dead-on-arrival cases and incidents not associated with identifiable information. We again focus on 30, 60, 90 and 365-day time points and found that during the 365-day follow-up period, 13.28% of those who experienced a nonfatal overdose went on to die (623 of 4,690). Of these deaths, 33.39% (208 of 623) were overdose-related, which suggests a 365-day follow-up overdose-related mortality rate of 4.44% (208 of 4,690).

Table 2. Mortality by time point post-nonfatal overdose incident (N=4,690)

	Deaths	Overdose-related deaths	
At 30 days post-release	216 (4.6%)	69 (1.5%)	
At 60 days post-release	284 (6.1%)	94 (2.0%)	
At 90 days post-release	330 (7.0%)	112 (2.4%)	
At 365 days post-release	623 (13.3%)	208 (4.4%)	

Note: Time points are cumulative categories; ICD-10 codes for underlying causes of death X40-44, X60-64, X85, Y10-14 were considered overdose-related deaths per <u>CDC quidelines</u>.



Recent research suggests that implementing screening and medications for OUD for detainees could reduce thousands of overdose deaths yearly (46). The <u>OTE MOUD in Jail Model</u> aims to address this gap by implementing a standardized OUD screening tool at booking, all three FDA approved medications, psychosocial services, and discharge planning. By integrating jail and vital death records the CBHJ has developed a method to understand jail program effectiveness on mortality outcomes. Future efforts will focus on further examining the association between jail OUD practices and overdose mortality.

Fatal overdose following a non-fatal event are much higher in this analysis than those reported in the prior literature (54) and speak to the need for post-overdose response programs. Since January 2020 the CBHJ has facilitated the implementation of a <u>Proactive Response to Overdose and Appropriate Connections to Treatment (PROACT</u>) where first responders notify treatment providers of an overdose event and recovery coaches follow up with survivors at their respective stages of change. If direct contact was made, patient engagement was measured as either "low" (i.e., received information, fentanyl test strips and/or naloxone), "medium" (i.e., interest in syringe services), or "high" (i.e., interest in substance use disorder services). Given direct contact in Kent or Monroe counties, over 80% engaged with treatment providers to a "low" or "medium", or "high" level. While preliminary evidence on PROACT is positive it speaks to the potential for broader statewide integration of fatal and non-fatal overdose events (55) to understand whether specific post-overdose practices are associated with reduced mortality.



Michigan Overdose Data to Action County Scorecard

Following the success of the <u>CBHJ SIMPLE Scorecard</u> in providing a county-level assessment of services for behavioral health disorders across criminal-legal systems, we have started development of a MODA Scorecard. For this tool we are using the <u>CDC's Evidence-Based Strategies for Preventing Opioid Overdose</u> as a guiding document to identify and measure the appropriate strategies being implemented at the county-level.

The scorecard process thus far has entailed the identification and operationalization of data elements to measure the CDC strategies. As shown in Table 1, some of the strategies are driven by <u>state legislation</u> (e.g. Good Samaritan legislation and targeted naloxone distribution) while other strategies require county- and local-level implementation. For example, some points, such as the existence of the <u>Good Samaritan laws</u>, may only be applicable to a state level, and we may not expect county-level variance. We also aim to look at when these practices were implemented, and also include new and promising practices where appropriate. Additionally, some practices will have sub-scores, where counties will be assessed by the level of fidelity achieved at a particular time, which is associated with additional points on the MODA scorecard.

While some of the data and information necessary to measures these factors is public, and others come from novel data acquired by the CBHJ and state partners, there remain notable gaps in our potential to measure these strategies. CBHJ will continue to work with state-level stakeholders to refine operationalization methods for the remaining points on the overdose prevention scorecard and identify data sources, or proxy data sources, to measure each of the factors. Many of these data points are now available through the MODA Dashboard; however, if key CDC points remain unoperationalizable or measured, the CBHJ will design a survey to local public health departments and related stakeholders to fill gaps. Our ultimate goal is conduct analysis that combines these factors to determine if or how they are associated with county-level fatal and nonfatal overdose rates.

CDC Category	Point name	Scope of data	Operationalized	County variation	Start date known
Targeted Naloxone Distribution	Targeted Naloxone Distribution program exists	Statewide	Maybe	Yes	Unknown
	Police agencies carry Naloxone	Unknown	Not yet	Yes	Unknown
	County hospital partnered with MI-OPEN to distribute Naloxone	Statewide	Maybe	Yes	Unknown
	EMS agencies leave behind Naloxone after overdoses	Statewide	Yes	Yes	Yes
Medication Assisted Treatment	Methadone provider exists within county	Statewide	Yes	Yes	No
	Buprenorphine availability	Statewide	Yes	Yes	No
Academic Detailing	The CBHJ is involved with the site	Statewide	Yes	Yes	Yes
	The site is involved with OTE	Statewide	Yes	Yes	Yes
Eliminating Prior- authorization Requirements for MOUD	Physicians can prescribe MOUD without prior authorization requirements; May not vary on a county level	Unknown	Maybe	No	Maybe
Screening for Fentanyl in Routine Clinical Toxicology Testing	Fentanyl testing available	Unknown	Maybe	No	Maybe

Table 1: MODA Scorecard Factors and Operationalized Date Element Characteristics



WAYNE STATE UNIVERSITY School of Social Work Center for Behavioral Health and Justice

911 Good Samaritan Laws	Police agencies honor Good Samaritan laws, even for bystanders	Unknown	Not yet	Yes	Yes
	Did the state have Good Samaritan legislation?	Statewide	Yes	No	Yes
Naloxone Distribution in Treatment Centers and Criminal Justice Settings	Treatment centers have targeted Naloxone program	Unknown	Not yet	Yes	Unknown
	Jail offers Naloxone to program participants	Statewide	Yes	Yes	2020 only
	Jail offers Naloxone to anyone who asks	Statewide	Yes	Yes	2020 only
MAT in Criminal Justice Settings	Jail offers Buprenorphine continuation	Statewide	Yes	Yes	2020 only
and Upon Release	Jail offers Buprenorphine induction	Statewide	Yes	Yes	2020 only
NEIEASE	Jail offers Methadone continuation	Statewide	Yes	Yes	2020 only
	Jail offers Methadone induction	Statewide	Yes	Yes	2020 only
	Jail offers Naltrexone induction	Statewide	Yes	Yes	2020 only
Initiating Buprenorphine -based MAT in EDs	Emergency Department physicians prescribe Buprenorphine	Unknown	Maybe	Yes	Unknown
Syringe Service Programs	Syringe exchange program exists within county	Statewide	Yes	Yes	No
	Was it run by a harm reduction agency other than the public health department	Statewide	Yes	Yes	No
(Non-CDC) Post-overdose Response Program	Post-overdose response program uses EMS data to spur a follow-up visit	Statewide	Maybe	Yes	Yes
(Non-CDC) Paraphernalia laws do not exist	Municipality does not issue paraphernalia charges	Unknown	Maybe	Yes	Unknown
(Non-CDC) User's union	Users' unions exist in the county	Unknown	Maybe	Yes	Unknown
(Non-CDC) Behavioral Health Homes	County had an Office Based Opioid Treatment Provider registered by the state	Statewide	Yes	Yes	Maybe
	County had an Opioid Treatment Program registered by the state	Statewide	Yes	Yes	Maybe
	County had a Behavioral Health Home registered by the state	Statewide	Yes	Yes	Maybe
(Non-CDC) Jail release protocols	Does the jail reactivate Medicaid upon release	Statewide	Yes	Yes	2020 only
	Does the jail have care continuity practices in place?	Statewide	Yes	Yes	2020 only



References

- 1. Boisvert RA, Martin LM, Grosek M, Clarie AJ. Effectiveness of a peer-support community in addiction recovery: participation as intervention. Occupational Therapy International. 2008;15(4):205–20.
- Cos TA, LaPollo AB, Aussendorf M, Williams JM, Malayter K, Festinger DS. Do Peer Recovery Specialists Improve Outcomes for Individuals with Substance Use Disorder in an Integrative Primary Care Setting? A Program Evaluation. J Clin Psychol Med Settings. 2019 Sep 13;
- 3. Min S-Y, Whitecraft J, Rothbard AB, Salzer MS. Peer Support for Persons with Co-Occurring Disorders and Community Tenure: A Survival Analysis. Psychiatric Rehabilitation Journal. 2007 Win;30(3):207–13.
- O'Connell MJ, Flanagan EH, Delphin-Rittmon ME, Davidson L. Enhancing outcomes for persons with cooccurring disorders through skills training and peer recovery support. Journal of Mental Health. 2017 Mar 10;0(0):1–6.
- Reingle Gonzalez J. Hogg Foundation for Mental Health Grant Program: Project CRE-001 Evaluation of DSHS Re-entry Project. [Internet]. University of Texas School of Public Health; 2019. Available from: https://hogg.utexas.edu/wp-content/uploads/2019/02/Re-Entry-Peer-Support-Final-Report-Jan-10-2019.pdf
- Rowe M, Bellamy C, Baranoski M, Wieland M, O'Connell MJ, Benedict P, et al. A Peer-Support, Group Intervention to Reduce Substance Use and Criminality Among Persons With Severe Mental Illness. PS. 2007 Jul 1;58(7):955–61.
- 7. Tracy K, Burton M, Nich C, Rounsaville B. Utilizing peer mentorship to engage high recidivism substanceabusing patients in treatment. Am J Drug Alcohol Abuse. 2011 Nov;37(6):525–31.
- Ray B, Watson DP, Xu H, Salyers MP, Victor G, Sightes E, et al. Peer recovery services for persons returning from prison: Pilot randomized clinical trial investigation of SUPPORT. Journal of Substance Abuse Treatment. 2021 Jul;126:108339.
- Victor G, Sightes E, Watson DP, Ray B, Bailey K, Robision L, et al. Designing and implementing an intervention for returning citizens living with substance use disorder: discovering the benefits of peer recovery coach involvement in pilot clinical trial decision-making. Journal of Offender Rehabilitation. 2021 Feb 17;60(2):138–58.
- 10. Goddard P. Changing attitudes towards harm reduction among treatment professionals: a report from the American Midwest. International Journal of Drug Policy. 2003 Jun 1;14(3):257–60.
- 11. Goddard P, Mallott MA, Grindle ME. Reliability and Validity of the Harm Reduction Acceptability Scale. PsycEXTRA Dataset [Internet]. [cited 2021 Jun 28]; Available from: https://www.academia.edu/17630094/ Reliability_and_Validity_of_the_Harm_Reduction_Acceptability_Scale
- 12. Chou R, Korthuis PT, McCarty D, Coffin PO, Griffin JC, Davis-O'Reilly C, et al. Management of Suspected Opioid Overdose With Naloxone in Out-of-Hospital Settings: A Systematic Review. Annals of Internal Medicine. 2017 Dec 19;167(12):867.



- 13. Chamberlain JM, Klein BL. A comprehensive review of naloxone for the emergency physician. The American Journal of Emergency Medicine. 1994 Nov 1;12(6):650–60.
- 14. Wermeling DP. Review of naloxone safety for opioid overdose: practical considerations for new technology and expanded public access. Ther Adv Drug Saf. 2015 Feb;6(1):20–31.
- 15. Clark AK, Wilder CM, Winstanley EL. A Systematic Review of Community Opioid Overdose Prevention and Naloxone Distribution Programs. Journal of Addiction Medicine. 2014 Jun;8(3):153–63.
- 16. Naumann RB, Durrance CP, Ranapurwala SI, Austin AE, Proescholdbell S, Childs R, et al. Impact of a community-based naloxone distribution program on opioid overdose death rates. Drug and Alcohol Dependence. 2019 Nov 1;204:107536.
- 17. 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 Health Care. 2017 Jan 1;23(1):83–7.
- 18. Binswanger IA. Mortality After Prison Release: Opioid Overdose and Other Causes of Death, Risk Factors, and Time Trends From 1999 to 2009. Ann Intern Med. 2013 Nov 5;159(9):592.
- 19. Binswanger IA, Stern MF, Deyo RA, Heagerty PJ, Cheadle A, Elmore JG, et al. Release from Prison A High Risk of Death for Former Inmates. New England Journal of Medicine. 2007 Jan 11;356(2):157–65.
- 20. Lim S, Seligson AL, Parvez FM, Luther CW, Mavinkurve MP, Binswanger IA, et al. Risks of Drug-Related Death, Suicide, and Homicide During the Immediate Post-Release Period Among People Released From New York City Jails, 2001–2005. American Journal of Epidemiology. 2012 Mar 15;175(6):519–26.
- 21. Victor G, Zettner C, Huynh P, Ray B, Sightes E. Jail and Overdose: Assessing the Community Impact of Incarceration on Overdose. Addiction. 2021;
- 22. Darke S, Larney S, Farrell M. Yes, people can die from opiate withdrawal. Addiction. 2017;112(2):199–200.
- 23. Potter RH, Lin H, Maze A, Bjoring D. Jails and Public Health Service Delivery and Empirical Knowledge: The Impact of Jail Population "Flow." Am J Crim Just. 2012 Jun 1;37(2):200–8.
- 24. Doe-Simkins M, Quinn E, Xuan Z, Sorensen-Alawad A, Hackman H, Ozonoff A, et al. Overdose rescues by trained and untrained participants and change in opioid use among substance-using participants in overdose education and naloxone distribution programs: a retrospective cohort study. BMC Public Health. 2014 Apr 1;14(1):297.
- 25. OpiRescue [Internet]. OpiSafe. [cited 2021 Jun 29]. Available from:https://opisafe.com/products/opirescue
- 26. National Institute on Drug Abuse. Overdose Death Rates [Internet]. National Institute on Drug Abuse. 2021 [cited 2021 Jun 29]. Available from: https://www.drugabuse.gov/drug-topics/trends-statistics/overdose-death-rates
- 27. Cicero TJ, Ellis MS, Surratt HL, Kurtz SP. The changing face of heroin use in the United States: a retrospective analysis of the past 50 years. JAMA psychiatry. 2014;71(7):821–6.
- 28. Grau LE, Dasgupta N, Harvey AP, Irwin K, Givens A, Kinzly ML, et al. Illicit use of opioids: Is OxyContin[®] a "gateway drug"? The American Journal on Addictions. 2007;16(3):166–73.



- 29. Rudd RA, Paulozzi LJ, Bauer MJ, Burleson RW, Carlson RE, Dao D, et al. Increases in heroin overdose deaths—28 states, 2010 to 2012. MMWR Morbidity and mortality weekly report. 2014;63(39):849.
- 30. Strickler GK, Zhang K, Halpin JM, Bohnert AS, Baldwin G, Kreiner PW. Effects of mandatory prescription drug monitoring program (PDMP) use laws on prescriber registration and use and on risky prescribing. Drug and Alcohol Dependence. 2019;
- 31. Gladden RM. Fentanyl law enforcement submissions and increases in synthetic opioid–involved overdose deaths—27 states, 2013–2014. MMWR Morbidity and mortality weekly report. 2016;65.
- 32. O'Donnell JK, Halpin J, Mattson CL, Goldberger BA, Gladden RM. Deaths involving fentanyl, fentanyl analogs, and U-47700—10 states, July–December 2016. MMWR Morbidity and mortality weekly report. 2017;66(43):1197.
- 33. Hedegaard H. Drug Overdose Deaths in the United States, 1999–2018 [Internet]. 2020 [cited 2020 Mar 25]. Available from: https://www.cdc.gov/nchs/products/databriefs/db356.htm
- 34. Volkow ND, Blanco C. The changing opioid crisis: development, challenges and opportunities. Molecular Psychiatry. 2020 Feb 4;1–16.
- 35. Magura S, Weller BE, Smith DR, Saxton MM, Amaratunga P. Surveillance by oral fluid of drugs subject to misuse among individuals under arrest. The American Journal of Drug and Alcohol Abuse. 2021 Mar 4;47(2):247–54.
- 36. Park JN, Rashidi E, Foti K, Zoorob M, Sherman S, Alexander GC. Fentanyl and fentanyl analogs in the illicit stimulant supply: Results from U.S. drug seizure data, 2011–2016. Drug and Alcohol Dependence. 2021 Jan 1;218:108416.
- 37. Jacka BP, Goldman JE, Yedinak JL, Bernstein E, Hadland SE, Buxton JA, et al. A randomized clinical trial of a theory-based fentanyl overdose education and fentanyl test strip distribution intervention to reduce rates of opioid overdose: study protocol for a randomized controlled trial. Trials. 2020 Nov 26;21(1):976.
- 38. Zibbell JE, Peiper NC, Duhart Clarke SE, Salazar ZR, Vincent LB, Kral AH, et al. Consumer discernment of fentanyl in illicit opioids confirmed by fentanyl test strips: Lessons from a syringe services program in North Carolina. International Journal of Drug Policy. 2021 Jul 1;93:103128.
- 39. Peiper NC, Clarke SD, Vincent LB, Ciccarone D, Kral AH, Zibbell JE. Fentanyl test strips as an opioid overdose prevention strategy: Findings from a syringe services program in the Southeastern United States. Int J Drug Policy. 2018 Oct 3;
- 40. Ma J, Bao Y-P, Wang R-J, Su M-F, Liu M-X, Li J-Q, et al. Effects of medication-assisted treatment on mortality among opioids users: a systematic review and meta-analysis. Mol Psychiatry. 2019 Dec;24(12):1868–83.
- 41. Fullerton CA, Kim M, Thomas CP, Lyman DR, Montejano LB, Dougherty RH, et al. Medication-Assisted Treatment With Methadone: Assessing the Evidence. PS. 2014 Feb;65(2):146–57.
- 42. Mattick R, Kimber J, Breen C, Davoli M. Buprenorphine maintenance versus placebo or methadone maintenance for opioid dependence. In: The Cochrane Collaboration, editor. Cochrane Database of



Systematic Reviews [Internet]. Chichester, UK: John Wiley & Sons, Ltd; 2003 [cited 2019 Apr 17]. Available from: http://doi.wiley.com/10.1002/14651858.CD002207.pub2

- 43. Mattick RP, Breen C, Kimber J, Davoli M. Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. Cochrane Drugs and Alcohol Group, editor. Cochrane Database of Systematic Reviews [Internet]. 2009 Jul 8 [cited 2019 Apr 17]; Available from: http://doi.wiley.com/10.1002/14651858.CD002209.pub2
- 44. Connery HS. Medication-Assisted Treatment of Opioid Use Disorder: Review of the Evidence and Future Directions. Harvard Review of Psychiatry. 2015 Apr;23(2):63.
- 45. Connock M, Juarez-Garcia A, Jowett S, Frew E, Liu Z, Taylor R, et al. Methadone and buprenorphine for the management of opioid dependence: a systematic review and economic evaluation. Health Technol Assess. 2007;11(9):1–171.
- 46. Macmadu A, Adams JW, Bessey SE, Brinkley-Rubinstein L, Martin RA, Clarke JG, et al. Optimizing the impact of medications for opioid use disorder at release from prison and jail settings: A microsimulation modeling study. International Journal of Drug Policy. 2021 May 1;91:102841.
- 47. Vestal C. New Momentum for Addiction Treatment Behind Bars [Internet]. 2018 [cited 2020 May 15]. Available from: https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2018/04/04/newmomentum-for-addiction-treatment-behind-bars
- 48. Welch-Marahar M, Pinals D. Jail MAT Survey. Michigan Department of Health and Human Services.; 2021.
- 49. McCarty D, Gustafson DH, Wisdom JP, Ford J, Choi D, Molfenter T, et al. The Network for the Improvement of Addiction Treatment (NIATx): Enhancing Access and Retention. Drug Alcohol Depend. 2007 May 11;88(2–3):138–45.
- 50. Fields D, Knudsen HK, Roman PM. Implementation of Network for the Improvement of Addiction Treatment (NIATx) Processes in Substance Use Disorder Treatment Centers. J Behav Health Serv Res. 2016 Jul 1;43(3):354–65.
- 51. MS ACE, PhD TR, Fitzgerald MM, PhD DHG. Teaching the NIATx Model of Process Improvement as an Evidence-Based Process. Journal of Teaching in the Addictions. 2008 Sep 17;6(2):21–37.
- 52. Ray BR, Lowder EM, Kivisto AJ, Phalen P, Gil H. EMS naloxone administration as non-fatal opioid overdose surveillance: 6-year outcomes in Marion County, Indiana. Addiction. 2018 Dec;113(12):2271–9.
- 53. Formica SW, Apsler R, Wilkins L, Ruiz S, Reilly B, Walley AY. Post opioid overdose outreach by public health and public safety agencies: Exploration of emerging programs in Massachusetts. International Journal of Drug Policy. 2018 Apr 1;54:43–50.
- 54. Ray B, Lowder EM, Kivisto AJ, Phalen P, Gil H. EMS naloxone administration as non-fatal opioid overdose surveillance: 6-year outcomes in Marion County, Indiana. Addiction. 2018;113(12):2271–9.
- 55. Lowder EM, Amlung J, Ray BR. Individual and county-level variation in outcomes following non-fatal opioid-involved overdose. J Epidemiol Community Health. 2020 Jan 9;jech-2019-212915.