



## ORIGINAL RESEARCH

### Evaluating the effectiveness of problem-solving courts at preventing fatal and non-fatal opioid events: preliminary findings from Indiana

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#### Abstract

**Background:** Fatal and non-fatal events associated with drug misuse are skyrocketing in most United States jurisdictions, including Indiana. Historically, the role of the judiciary is to arrest, impose sanctions and protect society from harm. Adults arrested for drug abuse in Indiana can be sentenced to 1 of 17 correctional facilities. As an alternative, they may be eligible to participate in a problem-solving court (PSC) programme that refers individuals to treatment as a pretrial diversionary strategy. The aim of the study is to determine which interventions offered by PSCs and correctional facilities impact morbidity and mortality. The study began in 2019 and will end in 2023; therefore, the results in this manuscript are preliminary.

**Methods:** The study cohort included two populations arrested for drug misuse: (1) adults sentenced to Indianan correctional facilities (1 January 2018 to 30 June 2021) and (2) adults participating in an Indiana PSC programme (1 January 2018 to 30 June 2021). The study used a mixed-methods design that integrated qualitative interviews of deputy wardens, PSC team members and service providers with the following quantitative datasets: sentencing information, emergency department visits, inpatient hospitalization admissions, prescription drug

monitoring programme data and death records. The individuals will be followed at 2-week, 4-week, 6-month and 1-year intervals post-release. Difference-in-difference and time-to-event analyses will identify impactful interventions. A model will be created to show the effect of impactful interventions in Indiana counties that do not have PSCs.

**Results:** Findings are preliminary. There is variability amongst correctional facilities regarding programme eligibility, provided services and provision of medication-assisted treatment. All correctional facilities were severely impacted by the COVID-19 pandemic.

**Conclusion:** It is anticipated that the adoption of impactful interventions will lower opioid-related morbidity and mortality rates.

**Keywords:** correctional facility, courts, drug misuse, law enforcement, morbidity, substance-related disorders.

#### Citation

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## Introduction

Fatal events associated with the misuse of drugs are skyrocketing in most United States jurisdictions. Provisional numbers from the Centers for Disease Control and Prevention (CDC) suggest that overdose deaths increased by 30% from 2019 to 2021 in the United States.<sup>1</sup> Opioids, primarily synthetic opioids (other than methadone), were involved in 70.6% of these fatalities.<sup>2</sup> In fact, overdose deaths, along with fatalities

from coronavirus, homicides and some chronic diseases, contributed to 2020's single-year life expectancy decline – the largest regression since 1943.<sup>3</sup>

Non-fatal overdose events are also on the rise. For example, the annual number of emergency department (ED) visits in the United States involving opioids is increasing across most age groups (Table 1). Indiana is one of the many jurisdictions experiencing an opioid crisis. The CDC estimates overdose

**Table 1. Emergency department visits for non-fatal overdoses – all opioids.<sup>38</sup>**

Age	2016	2017	Percentage change
0–14	3918	3721	–5.03%
15–19	8426	7541	–10.5%
20–24	35,679	31,865	–10.7%
25–34	89,090	94,915	+6.54%
35–44	50,084	54,223	+8.26%
45–54	43,589	44,533	+2.17%
55–64	37,773	41,246	+9.19%
>65	25,341	27,579	+8.83%
TOTAL	293,900	305,623	+3.99%

Annual number of emergency department visits for non-fatal overdoses involving all opioids, by age, in the United States for years 2016 and 2017. Data adapted from ref.<sup>38</sup>

fatalities in Indiana surged from 1704 in 2019 to 2268 in 2020 – a 33.1% increase.<sup>2</sup> With respect to non-fatal events, the number of individuals admitted to Indianan EDs specifically for opioid overdoses escalated from 1460 admissions in 2009 to 3199 in 2016 – a 119% increase.<sup>4</sup>

Historically, the role of the judiciary in drug-related crimes is to arrest, impose sanctions and protect society from future harm. Research suggests, however, that there is no significant relationship between state imprisonment rates and self-reported drug use, arrest rates for drug misuse or mortality rates.<sup>5</sup> State prison populations have grown more than 700% since the 1970s,<sup>6</sup> and state correction budgets have nearly quadrupled.<sup>7</sup> The rate of incarceration in Indiana (723 per 100,000)<sup>8</sup> exceeds the national rate (698 per 100,000)<sup>9</sup> by 3.58%.

Individuals of colour are overrepresented in Indiana correctional facilities. Although only 9% of Indianans identify as Black,<sup>10</sup> Black adults comprise 39% of its incarcerated population.<sup>11</sup> Although the rate of incarcerated individuals is higher for all persons of colour (Table 2), Black adults are about 5.2 times more likely to be incarcerated in Indiana than Whites.

In 2019, approximately 15% of all United States arrests involved at least one drug abuse violation.<sup>12</sup> As of January 2021, 29.25% of all adults incarcerated in Indiana were convicted of one or more drug offenses.<sup>13</sup> Adults arrested for drug-related crimes in Indiana can be sentenced to 1 of 17 correctional facilities. Characteristics of these facilities are found in Table 3.

Prisoners are the only population in the United States constitutionally entitled to healthcare. Under the Eighth

Amendment,<sup>14</sup> the denial of medical services to the incarcerated is tantamount to “*cruel and unusual punishment*”. A prisoner’s accessibility to healthcare, however, is not limitless. “[S]ociety does not expect that prisoners will have unqualified access to health care.”<sup>15</sup> Rather, incarcerated individuals have the right to “*adequate medical care*” for “*serious*” medical conditions.<sup>16</sup> The courts have defined “*adequate medical care*” as services that are “*at a level reasonably commensurate with modern medical science and of a quality acceptable within prudent professional standards*”.<sup>17</sup> The onus is placed upon correctional facilities to determine what level and types of services fulfil a prisoner’s constitutional right to medical care. Indiana prisoners post-release are 129 times more likely to die of a drug overdose than the general population, especially if their addiction was not adequately treated whilst incarcerated.<sup>18</sup>

As an alternative to incarceration, individuals arrested for drug misuse may be eligible to participate in a problem-solving court (PSC) programme. PSC programmes refer arrested individuals to treatment as a pretrial diversionary strategy and address the underlying issues associated with criminal offenses. Participation in PSC programmes is not automatic; rather, individuals have to apply to participate and can be denied enrolment. PSCs use a phased programme model that is typically longer in duration than traditional prison sentences (correctional facility interviews, unpublished data, October 2020 to July 2021). For example, the advisory sentence for an individual arrested in Indiana for possession of less than 5 g of heroin is 1 year.<sup>19</sup> It would take that same individual 12–36 months to complete a PSC programme.<sup>20</sup>

Indiana first began using PSCs in 1996.<sup>21</sup> Oversight for Indiana PSCs falls to the Indiana Office of Court Services (IOCS).<sup>22</sup> There are currently 117 Indiana PSCs serving various populations (Table 4; the types of PSCs participating in this study are bolded).

Although there are recognized ‘best practices’ for each type of PSC, the policies and treatments offered by individual programmes vary tremendously. For example, each PSC has its own eligibility and exclusionary criteria. The roles and responsibilities of the judges differ, including whether professional training is required. The length of the programmes and availability of medical therapies, cognitive therapies and social services fluctuate. Sanctions for participant non-compliance and incentives for programme completion are not standardized.<sup>23</sup>

Although previous studies have examined the effect of PSCs on recidivism,<sup>24</sup> characteristics of individual PSC policies, procedures and practices have not been rigorously evaluated. For the first time, investigators from Temple University, University of Pittsburgh, and Wayne State University address the following research question: Do PSCs promote the

**Table 2. Incarceration in Indiana.<sup>39</sup>**

Ethnic/racial identification	Incarceration rate ratios compared to the White population	Incarceration rate ratios compared to the Latinx population	Incarceration rate ratios compared to the American Indian/Alaskan Native population	Incarceration rate ratios compared to the Black population
Black	5.192	3.603	3.169	1.000
American Indian/Alaskan Native	1.638	1.137	1.000	0.316
Latinx	1.441	1.000	0.880	0.278
White	1.000	0.694	0.610	0.193

Incarceration rate ratios by ethnic/racial background in Indiana, compiled from 2010 data.

Data adapted from ref.<sup>39</sup>

**Table 3. Indiana adult correctional facilities.<sup>40</sup>**

Correctional facility name	Minimum security	Medium security	Maximum security
Branchville Correctional Facility		X	
Chain O'Lakes Correctional Facility	X		
Correctional Industrial Facility		X	
Edinburgh Correctional Facility	X		
Heritage Trail Correctional Facility		X	
Indiana State Prison		X	X
Indiana Women's Prison			X
Madison Correctional Facility	X		
Miami Correctional Facility	X		X
New Castle Correctional Facility	X	X	X
Pendleton Correctional Facility	X		X
Plainfield Correctional Facility		X	
Putnamville Correctional Facility		X	
Rockville Correctional Facility		X	
South Bend Community Re-Entry	X		
Wabash Valley Correctional Facility	X		X
Westville Correctional Facility	X		X

Security levels for each of the adult correctional facilities in Indiana in 2021.

Information derived from ref.<sup>40</sup>

health and wellness of individuals and their communities by impacting subsequent morbidity and mortality rates? The aims of the study are to (1) provide an overview of correctional facility services and PSC programmes and individual characteristics of persons arrested for drug misuse; (2) identify the strategies, or combination of strategies, that keep individuals alive and healthy after they are released from a correctional facility or complete a PSC programme; and (3) model the impactful strategies to show

their effect in Indiana communities not currently utilizing them. The study began in 2019 and will end in 2023; therefore, the results presented in this manuscript are preliminary.

## Methods

Legal epidemiology is a discipline that includes the study and application of law as an intervention to prevent disease and injury.<sup>25</sup> As with other disciplines rooted in science,

**Table 4. Indiana problem-solving courts.<sup>41</sup>**

<b>Court type</b>	<b>Court type mission</b>	<b>Number of current problem-solving courts</b>	<b>Number of planned problem-solving courts</b>
Adult drug court <sup>42</sup>	Provides specialized long-term drug treatment programmes for individuals suffering from substance use disorder	44	7
Domestic violence court <sup>43</sup>	Provides social services and interventions to domestic violence offenders and support to their victims	1	2
Family recovery court <sup>44</sup>	Provides support to children and long-term treatment programmes for individuals suffering from substance use disorder	19	2
Juvenile drug court <sup>45</sup>	Provides support services and intensive, continuous judicial supervision for youth	1	1
Juvenile problem-solving court <sup>46</sup>	Provides immediate and highly structured judicial intervention for youth	2	0
Juvenile mental health court <sup>47</sup>	Provides services and support that allow youth to remain in or re-enter their communities	0	1
Mental health court <sup>48</sup>	Provides community-based treatment programmes for individuals with serious mental illnesses	8	4
Operating vehicle whilst intoxicated court <sup>49</sup>	Provides community-based programmes for individuals charged with drunk driving as a Level 6 felony	1	1
Problem-solving court <sup>50</sup>	Provides immediate and highly structured judicial intervention for eligible individuals	1	0
Re-entry court <sup>51</sup>	Provides support to individuals transitioning into the community by coordinating mental health treatment and other services	11	0
Truancy court <sup>52</sup>	Provides a partnership between schools, law enforcement, social service providers, mental health providers and clinicians to stabilize families and reengage youth in education	1	0
Veterans court <sup>53</sup>	Provides services for mental health and substance abuse issues arising from military services	28	1
<b>TOTAL</b>		117	19

Number and types of Indiana Problem Solving Courts in Indiana as of 1 July 2021. This table includes Indiana Office of Court Services certified and planned problem-solving courts. Bolded court types indicate those participating in the study. Information derived from refs.<sup>41–53</sup>

legal epidemiological methods are scientific, systematic, transparent, replicable, precise and measurable.<sup>26</sup> The application of legal coding methodology allows law and policy to become data that can be measured and analysed to show impact and effectiveness on health outcomes.

This study utilized a mixed-methods design. The investigators created quantitative data from correctional facility and PSC

records and written policies describing provided services. Qualitative interviews were also coded. An 11-person Stakeholder Committee, comprised of a student with lived experience as well as nationally recognized experts in the judiciary, corrections, public health, medicine, modelling and legal epidemiology, was convened to advise the researchers on the project's overall aims, design and methods, contribute to the analysis and interpretation of research results, and assist with dissemination strategies.

**Table 5. Management performance hub datasets.**

Dataset	Data source
Death	Indiana State Department of Health (Vital Records)
Emergency department visits	Indiana State Department of Health
Emergency medical services calls	Indiana Department of Homeland Security
Inpatient hospitalization admissions	Indiana State Department of Health
Prescription drug monitoring programme (medication prescribed for opioid use disorder)	Indiana Professional Licensing Agency
Sentencing	Indiana Department of Correction

Datasets, and corresponding sources, available in 2021 from Management Performance Hub for linkage in the enhanced research environment.

Information derived from ref.<sup>28</sup>

## The study cohort

Indiana was chosen as the jurisdictional focus of the study because it was experiencing an opioid crisis, it had a significant number and variety of PSCs, and it had a governmentally sponsored data warehouse with existent link datasets. This study included two populations in its cohort: (1) adults who were sentenced for drug misuse from 1 January 2018 to 30 June 2021, who went to one of Indiana's 17 adult correctional facilities, and (2) adults who were sentenced for drug misuse from 1 January 2018 to 30 June 2021, who participated in one of 29 Indiana PSC programmes.

The IOCS advised the investigators to begin the study on 1 January 2018, because, prior to that date, few PSCs were established in Indiana. The 30 June 2021 end date was selected because it allowed investigators to follow participants during the post-release windows noted as critically important in the literature: 2 weeks, 4 weeks, 6 month and 1 year.<sup>27</sup>

The IOCS also suggested that the investigators limit eligibility to individuals who participated in PSCs that used an electronic case management system, the Supervised Release System (SRS), to track programme involvement. Amongst other data, SRS records include chronological case summaries and hearing information. PSCs that collect data on paper records lack uniformity and granularity and are difficult to access. Eighty-five Indiana PSCs utilized the SRS during the study's timeframe. To facilitate collaboration between the investigators and the courts, the IOCS sent emails to the eligible PSCs inviting them to attend an introductory webinar during which the investigators introduced the project and answered questions. Of the 36 PSCs represented at the webinar, 29 (or 38% of the eligible PSCs) agreed to collaborate with the investigators.

Unlike information about individuals sentenced to correctional facilities, SRS data are privileged under Indiana law and are not openly accessible. The investigators were therefore required to obtain permission from the Indiana Supreme Court to

access the collaborative PSC's SRS records. As of 13 October 2021, permission to access these data is pending. When access is granted, the IOCS will send the SRS data directly to the Indiana's Management Performance Hub (MPH) for linkage with relevant existent datasets (Table 5). MPH is an Indiana Executive Branch agency that partners with governmental and non-governmental agencies to empower data-driven decision-making.<sup>28</sup> MPH fulfils its mission by providing robust, linked datasets in a secure research environment.

## Qualitative interviews

Qualitative interviews were critical to understand more fully and accurately the types of interventions offered to individuals sentenced for drug misuse. The interviews captured inclusionary and exclusionary criteria, substance abuse treatment programming, and barriers to treatment. Four types of individuals were identified for the qualitative interviews: deputy wardens in Indiana's 17 adult correctional facilities; Addiction Recovery Services (ARS) representatives who provided services in Indiana's correctional facilities; members of PSC teams (i.e. judges, court administrators, coordinators, prosecutors and defence attorneys); and PSC treatment providers. The University of Pittsburgh Institutional Review Board (IRB) issued an 'Exempt' designation for the qualitative interviews. As future interviews may also take place at Temple University, the qualitative interviews were also submitted to Temple's IRB for review and received an 'Exempt' designation.

Each qualitative interview was structured in two parts. First, a brief written Qualtrics survey collected background information about the person being interviewed. Next, a semi-structured virtual in-person qualitative interview was conducted and audio recorded. As of 13 October 2021, 11 deputy wardens and 6 ARS providers have been interviewed across 82% of Indiana's adult correctional facilities. Written protocols that also inform eligibility criteria and provided services were obtained from five correctional facilities.

The audio recordings were uploaded to a transcription service website. To ensure confidentiality, the audio was segmented so that multiple individuals transcribed each interview. The transcription service's platform was built on an Amazon Web Services cloud solution that provides for additional security.

Codebooks were developed to create data for the qualitative interviews and written protocols. The conceptual evaluation framework developed by the US Department of Justice in its Multi-Site Adult Drug Court Evaluation study<sup>29</sup> served as a model for the codebooks. Multiple collaborative sessions were conducted amongst the investigators to discuss common definitions, rules, assumptions and questions. Weekly meetings were held to discuss issues and inconsistencies in coding approaches.

Inter-rater reliability (IRR) was calculated to ensure the validity and reliability of the coding process. An IRR methodology similar to that developed by McAlister et al.<sup>30</sup> was used. For the IRR exercise, coded responses for three interview transcripts and three written protocols were exported from Qualtrics as Excel documents. Responses to each question were examined. Agreements and disagreements between the triplet of coders were totalled and IRR scores were calculated by dividing the total number of agreements (i.e. consistent coding amongst all the three coders) by the total number of responses given by each individual coder. Once each coder had their own IRR score for each document, the number of consistent answers was averaged. The three transcripts of recorded deputy warden interviews yielded IRR scores of 71%, 76% and 77%. The three written protocols obtained from correctional facilities yielded IRR scores of 84%, 89% and 95%.

The COVID-19 public health emergency significantly impacted operations in Indiana's courts. Because of unforeseen issues associated with the pandemic, the IOCS requested that the investigators suspend their collaboration with PSCs in March 2020. Collaboration resumed in December 2020. Qualitative interviews of PSC team members and service providers have begun. It is anticipated that these interviews will be concluded by 31 March 2022. As of 13 October 2021, the initial interviews have not been coded or analysed.

## Data linkage

The MPH is governed by a variety of statutory and regulatory provisions, policies and agreements regarding privacy and sharing of data received from its partners.<sup>31</sup> Each agency identified in Table 5<sup>i</sup> has agreed to have its datasets linked.

Data dictionaries have been shared and meaningful variables identified. As of 13 October 2021, the agencies, MPH and the researchers are in the process of finalizing a charter agreement. After the charter agreement is perfected, the MPH will assign a unique identifier known as a 'global ID' to each individual in the study cohort. University of Pittsburgh

researchers will access data through MPH's Enhanced Research Environment, which is a scalable environment that uses a Windows-based desktop application containing Linux-based open-source tools supported on multi-cloud environments (e.g. Jupyter Notebooks and R Studio with capability for 'bring-your-own-license' for SAS, STATA, IBM, Power BI, Tableau, and Microsoft Office products). Researchers and analysts will be able to 'meet' collaboratively in the virtual environment to share and analyse data. A code repository will allow analysts to iterate on and keep track of their code. The Enhanced Research Environment is also a hardened environment in which data can flow in but cannot flow out without approval from MPH. The MPH data review team will ensure that privacy and suppression laws, contractual requirements, and security protocols are met.

## Identifying impactful interventions

After the MPH links the datasets identified in Table 5, the investigators will use the coded qualitative interviews and written protocols to determine the specific therapies, treatments, and programmes offered to each member of the study cohort. As individuals are at higher risk for overdose death following their release from incarceration,<sup>32</sup> the study cohort will be followed for morbidity (measured by ED visits, emergency medical services (EMS) calls and in-patient hospitalizations) and mortality outcomes (death) at 2 weeks, 4 weeks, 6 months and 1-year post-programme intervals. The data analysis portion of the study received a 'Not Human Subjects' research designation from Temple University IRB, University of Pittsburgh IRB, and Wayne State University IRB.

Individual-level covariates will include race/ethnicity, gender, age (categorical) and time at risk (days). All outcome variables will be measured dichotomously (yes, no) and include any non-fatal overdose or death. The outcome of primary interest will be death, which will come from death certificates submitted by county coroners to the Indiana State Department of Health Division of Vital Records. Three mortality outcomes of particular public health importance will be evaluated: all-cause (non-drug related); drug-related causes (ICD10 X40-44, X60-X64, X85, Y10-Y15) and opioid-related events (any mention of T40.0-T40.4; T40.6).

Non-fatal overdose EMS events will be operationalized as EMS contacts where naloxone was administered, the patient was resuscitated and the patient survived at least 1 day following resuscitation. These data are submitted by provider agencies to the National Emergency Medical Services Information System (NEMSIS), which is managed by the Indiana Department of Homeland Security. Data on ED visits are compiled in the 'Uniform Billing 2004 form' and include inpatient data that will be operationalized using primary or secondary diagnosis codes for overdose (ICD-10-CM T40.0-T40.4; T40.6).

Descriptive analyses on all study variables will be conducted. Outcomes amongst the cohort will then be evaluated in

<sup>i</sup> As of October 13, 2021, permission to link the SRS data is pending.

two main ways: difference-in-difference (DID) analysis and time-to-event analysis. DID is a quasiexperimental design that uses longitudinal data from treatment (PSC) and control (correctional facility) groups to obtain an appropriate counterfactual to estimate a causal effect. DID will be used to estimate the impact of PSCs by comparing the changes in outcomes over time between PSC and correctional facility populations by including an interaction term between the treatment and dummy groups.

Time-to-event analysis for morbidity and mortality outcomes will also be examined. Cox proportional hazards regression<sup>33</sup> will be used. Whether survival is associated with demographic factors (gender, race/ethnicity and age) and programme and sentencing characteristics will be examined. These will be modelled as separate variables because they are applications of distinct policies and practices. Because it is anticipated that study members may be at risk for multiple adverse events, order and timing of events will be considered. This type of conditional approach assumes that a subject is not at risk for a subsequent event until a prior event occurs, and hence takes the order of events into account. The Prentice–Williams–Peterson model<sup>34</sup> on the calendar time scale will be used to define time intervals for all recurrent events (i.e. EMS presentations, ED visits and in-patient hospital admissions) and/or terminal event (death).

## Modelling impactful interventions

Under a separate CDC contract, the Public Health Dynamics Laboratory at the University of Pittsburgh is developing a model representing the transition amongst various stages of opioid misuse. Typically, this type of transition model is used to simulate the ‘natural history’ of disease progressions and is a cornerstone for informing various legal and policy interventions.<sup>35</sup> The use of modelling has been limited, however, in the opioid epidemic due to the variability of laws and policies. In this study, the investigators will (1) reconstruct the natural history of the opioid epidemic in Indiana in jurisdictions without PSCs and (2) simulate the potential effect of impactful treatments where PSCs have not been utilized.

To avoid overfitting of the opioid transition model, it will be validated using a combination of cross-validation and back-casting simulations. In cross-validation, a random set of counties will be excluded from the estimation phase. The remaining counties will be used to predict the impact of interventions in these excluded counties. The best models will then be chosen based upon their performance in the excluded counties. Back-casting simulation exercises will also be used to predict the performance of the model in each county whilst excluding the last few years from the calibration.

After the model is calibrated, a simulation will project the expected impact of various impactful interventions in each

county. ‘What-if’ scenarios, such as forecasting the impact of increased access to medical assisted treatment or the provision of naloxone concurrent with release, will be tested.

## Results

All findings and conclusions are preliminary; however, some themes have surfaced from the interviews of assistant wardens and ARS providers.

### Programme eligibility

Although the Department of Correction determines the policies for the individual correctional facilities, the ARS Director determines which inmates can participate in programmatic activities. It is easier for inmates to be accepted into programmes if they are ordered to by the court. GAIN scores (i.e. a screening tool used to discern problems and symptoms, such as substance use, behavioural health issues, and violent tendencies) are frequently used to determine programme eligibility but acceptable scores are not uniform. Gang activity and a history of violent behaviour are often exclusionary criteria. One facility excludes any individual who is in restricted housing (i.e. individuals who have markedly reduced out-of-cell time, reduced privileges and limited activities) from participating in any programmes.

### The impact of the pandemic

COVID-19 has significantly impacted the types and frequency of programmes. In-person interactions have been extremely limited, and it has been difficult to keep inmates engaged. Several facilities have provided programmes in the virtual space; however, this necessitates providing inmates with tablets or other interactive devices. In all but one facility, the cost of the device was borne by the inmate or their family. If they cannot afford the purchase, they are not afforded the services.

### The prison environment

It is difficult to maintain a sober prison environment. Illicit drugs are pervasive and are brought into by inmates’ families and friends as well as correctional facility staff.

### Incentives

Reducing the length of the sentence is used to encourage inmate participation in offered programmes and services.

### Commonly offered services

Some of the most frequently provided services include job training, life skills training (i.e. tools to assist with independent living as well as inmate jobs and mentor programmes), support groups including Alcoholics Anonymous, Narcotics Anonymous and the Self-Management And Recovery Training

(SMART) programme (the SMART Recovery programme is a science-based addiction recovery programme; unlike Alcoholics Anonymous or Narcotics Anonymous, there is no spiritual component in this therapy), and Thinking for Change (an integrated cognitive behavioural change programme comprising a series of lessons that build upon each other).

## Medication-assisted treatment

Naltrexone an opioid antagonist is the most frequently offered medication-assisted treatment. Vivitrol is the brand name for an injectable, extended-release form of Naltrexone. ReVia and Depade are brand names for a once-a-day pill form of Naltrexone. A few facilities have started to provide inmates with Naloxone (a medication to counter breathing difficulties during opioid overdose) upon release. Naloxone is sold under the brand name Narcan.

## Innovations

To encourage responsibility and foster kindness, one facility gives inmates animals to care for. One prison uses a geo-tracker to ensure programme participation and meeting attendance. Two facilities offer dialectal behavioural therapy that focuses on four core skills (mindfulness, emotional regulation, distress tolerance and interpersonal effectiveness) to help with problem-solving and challenging issues.<sup>36</sup>

## Discussion

Whether individuals should be incarcerated for drug misuse is a debatable issue; however, it is clear that, until we can figure out which interventions actually work, tens of thousands of lives will be lost, family units will be inextricably broken and communities will be decimated by the opioid crisis. The COVID-19 pandemic exacerbated drug misuse and created barriers to treatment, especially for those who are incarcerated.<sup>37</sup> Prison costs are escalating, leaving fewer available resources to provide constitutionally protected treatments, therapies and services.

## Conclusion

We hope that the proximal outcomes of this project will increase awareness for public health practitioners, health officials, law enforcement and members of the judiciary across the United States regarding which treatments, services and therapies positively impact health outcomes. We hope that the distal outcomes of the project will lead to the adoption of identified impactful recommendations in both correctional facilities and PSCs and that, like precision medicine, services will be targeted in populations where they are likely to have the greatest positive results. Finally, by adopting evidence-based practices, we hope that the long-term outcomes of this project will result in lowered opioid-related morbidity and mortality rates for individuals sentenced for drug-related charges.

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