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A Prospective Comparative Analysis of an Opioid Intervention Court versus a Traditional Drug Court on Health Outcomes: A Mixed-Methods Approach

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Abstract

Introduction/background: In the United States, the opioid epidemic and the criminal justice system are substantially interrelated. Individuals in the criminal justice system have high rates of opioid use and are at significant risk of opioid overdose death. Providing treatment for opioid use disorder (OUD) is an effective strategy to prevent opioid overdoses. In 2017, the Buffalo City Court in Buffalo, New York, established an opioid intervention court (OIC), a novel adaptation of a traditional drug treatment court (DTC) for individuals with OUD. Dissenting from the structure of many traditional DTCs, OIC delivers immediate and intensive OUD treatment. Adaptations of this court have been replicated throughout the country. Despite their growing popularity, limited mixed-methods research is available on their effectiveness.

Methods: This research proposal seeks to evaluate an OIC and traditional DTC to understand which drug court structure is more effective in reducing opioid overdose rates and substance use behaviors. Additionally, it will compare the barriers and facilitators to OUD treatment across two program types. To achieve these research aims, we will enroll 150 adults from an OIC (n = 75) and a traditional DTC (n = 75) to participate in a mixed-methods research study in Buffalo, NY.

Discussion: Results from this proposed research study will inform other court systems that are seeking to address the growing need for OUD treatment in the criminal justice system. If OICs demonstrate better outcomes and fewer barriers to substance use treatment, court systems may be encouraged to establish their own OICs.

Keywords: drug court; opioid court; substance use; opioid use

Introduction

Opioid use in the United States has risen dramatically since the 1990s.[1] The opioid overdose death rate increased more than 2.5 times between 1999 and 2015.[2] Between 1999 and 2017, more than 700,000 people died of a drug overdose.[3] In 2019 alone, national opioid overdose deaths totaled 49,860 individuals.[4] Rates of prescription opioid and heroin misuse are alarmingly high. In 2018, 10.3 million people misused prescription opioids and 808,000 people used heroin.[5] Recently, the COVID-19 pandemic has amplified the opioid epidemic by disrupting the national drug supply and changing the way individuals use opioids and engage with substance use treatment and harm-reduction programs.[6] Between March 2020, when COVID-19 was declared a global pandemic by the World Health Organization (WHO), and March 2021, reported national opioid overdose deaths rose from 53,098 to 72,805 deaths.[7,8]

Opioid overdose death rates in the state of New York (NY) almost tripled between 2010 and 2016.[9] In 2017, 3224 persons died due to opioid overdose.[10] Erie County, NY, has a population of approximately 920,000 persons and includes Buffalo, NY, which is the State's second largest city.[11] The opioid epidemic has severely impacted Erie County.[9] Between 2012 and 2017, opioid deaths in Erie County rose from 103 to 301 deaths.[12]

Although Erie County has implemented numerous strategies that have decreased the local number of opioid deaths from 301 in 2017 to 165 in 2018, the county still had one of the highest opioid overdose death rates in the State (excluding New York City) in 2018.[12,13] In addition, in 2019, Erie County had a disproportionately high number of drug overdose outpatient emergency department visits and administrations of naloxone. This data suggest that many individuals actively use opioids and are at high risk for opioid overdose.[13] Preliminary data from the Erie County Department of Health suggest a concerning increase in opioid overdose deaths in 2020 compared to 2019.[14]

Many clinical and public health consequences have resulted from the opioid epidemic. Clinically, a dramatic increase in the number of

infectious diseases associated with intravenous (IV) opioid use, such as hepatitis C virus (HCV) and human immunodeficiency virus (HIV) are evident. This has led to localized HIV outbreaks throughout the country and a rise in healthcare costs associated with treating HCV.[15,16] Social impacts include, but are not limited to, increased incarceration rates, family dysfunction, and a large number of children without caregivers due to parental absence and death from opioid overdose.[17] For these reasons, it is vital to implement strategies to prevent opioid overdose rates and reduce overall substance use behaviors.

Many factors have contributed to the opioid crisis in the United States. The public health ecologic framework for opioid use proposed by Saloner et al. identifies seven domains that interact and impact opioid use.[17] Similar to other health models, individual- and population-level factors are used to understand the initiation and persistence of the opioid crisis. Utilizing this novel framework is useful to address and mitigate the harms caused by illegal use and misuse of opioids. The first domain is the drug supply environment. This factor is important in understanding the opioid distribution networks and opioid-prescribing practices. The second domain includes structural factors (i.e., employment opportunity, education, material deprivation, violent experiences, discrimination, and homelessness). These influence the drug use behaviors of individuals with OUD and the interactions they have with the drug supply environment. In addition, this domain affects policies that impact opioid use and the health outcomes, social outcomes, employment, and criminal justice involvement of individuals with OUD. The third domain centers on health, criminal justice, economic, and other social policies. This domain is important because it interacts with the services and systems offered to people with OUD, such as medical care and addiction treatment. In addition, it also influences the structural factors associated with opioid use (e.g., employment and education opportunities). The fourth domain includes the services and systems that impact OUD. This domain is important in understanding what types of services people with OUD require and use. These include medical care, addiction treatment, criminal justice, welfare, education, and harm reduction. These services and systems impact patterns of opioid use. For example, the provision and accessibility of harm reduction care impacts one's ability to use sterile injecting equipment. The fifth domain is drug use behaviors, including IV opioid use and prescription and street drug initiation/cessation, frequency, and dependence. These behaviors are important predictors of social outcomes, employment, criminal justice involvement, and health outcomes of individuals with OUD. The sixth domain is context of drug use. This domain is important in understanding the factors that influence an individual while he or she is using opioids. Access to sterile syringes, safety while using opioids, using alone, and police interactions all impact social outcomes, employment, criminal justice involvement, and health outcomes of individuals with OUD. The seventh domain includes social outcomes, employment, criminal justice involvement, and health outcomes (e.g., fatal overdose, infections, and mental health disorders). This domain interacts with structural factors. For example, criminal justice involvement can impact an individual's ability to gain employment.

This framework illustrates connections between each of the seven domains that influence opioid use. Establishing these connections is useful in understanding the complexity of the opioid crisis. By addressing these domains, clinical and public health professionals can design and implement more successful interventions. This strategy is needed to reduce opioid use and prevent opioid overdose. A partnership between public health and legal systems is a promising collaborative opportunity for consideration to jointly tackle this pressing challenge experienced in the United States.

OUD in the Criminal Justice System

Opioid use among incarcerated individuals is of significant public health importance as many individuals with OUD are engaged with the criminal justice system. Of the 2.3 million incarcerated individuals, 64.5% have a substance use disorder.[18] OUD is a particularly common type of substance use disorder within the criminal justice system. In 2002, 12% of sentenced jail inmates reported regular use of opioids. This number increased to 19% between 2007 and 2009.[19] This represents a large population of individuals who would benefit from OUD treatment.

Despite the large number of inmates with OUD, many criminal justice facilities do not provide OUD treatment.[20] In addition, many people with OUD who have engaged in the criminal justice system are not connected to substance use treatment services. Only 50% of incarcerated individuals with an OUD have ever received drug treatment in their lifetime.[21] This represents a significant opportunity to offer OUD treatment to individuals involved with the criminal justice system.

Due to the lack of substance use treatment within most correctional facilities, individuals with OUD are commonly forced to withdraw from opioids while incarcerated. In addition to being a painful physical and emotional process, forced withdrawal also lowers an individual's tolerance to opioids. Multiple studies have demonstrated that individuals with OUD are at high risk for overdose after release from a criminal justice facility.[22] The American Society of Addiction Medicine's current evidence-based guidelines recommend that prisons provide substance use treatment to all inmates with OUD in order to mitigate this risk.[23] Further, offering OUD treatment in correctional facilities is cost-effective and reduces the chances of post-release overdose deaths.[24] For these reasons, increasing access to substance use treatment among incarcerated individuals with OUD is of high public health importance. However, many financial, logistical, and regulatory constraints prevent the implementation of OUD treatment in jails and prisons. In addition, some administrators at correctional facilities have a misunderstanding of the benefits of OUD treatment and believe that providing treatment enables substance use.[24]

In response to the increasing number of low-level, nonviolent offenders with drug charges, drug treatment courts (DTCs) were established in 1989 and designed to serve as a specialty court for people with substance use disorders. The ultimate goal of DTC is to assist offenders with substance use recovery and reduce the number of incarcerated individuals.[25] This approach is in contrast with most correctional facilities, as it acknowledges the benefits of providing offenders with universal substance use treatment.

The DTC process selects participants based on their criminal charges. Typically, chosen participants have a drug-related, nonviolent charge.[26]

Individuals who participate receive a combination of substance use treatment, mandatory drug toxicology screens, and high levels of judicial monitoring to ensure compliance.[27] The types of activities offered vary greatly depending on the court program. DTCs may also require a detoxification period or a methadone to abstinence treatment, where an individual takes methadone and is slowly tapered off the medication until he or she is abstinent. Programs usually include three stages (stabilization, intensive treatment, and transition) and typically last for 12–18 months.[28] Those who participate and complete the DTC program are eligible to receive a reduction or dismissal of criminal charges. Approximately 50–70% of participating individuals graduate from DTC.[29] In 2009, there were 2459 DTCs nationwide.[30] This number has grown to over 3100 in 2018.[31]

In response to the opioid crisis in the United States, law enforcement and court systems have piloted multiple programs designed to promote substance use treatment and recovery for individuals who are at risk of opioid overdose.[32] In May 2017, the Buffalo City Court received a grant from the Bureau of Justice to pilot a new type of specialty court specifically for people with OUD. The opioid intervention court (OIC) program is designed to reduce the number of opioid overdose deaths by enhancing the court's ability to connect people with OUD to substance use treatment, behavioral treatment, self-help, and ancillary services (such as housing and transportation) upon entry to the Buffalo criminal justice system.[33] Thus far, the program has shown promising results. Between May 2017 and September 2019, 522 individuals participated in the program and 74% had a closed case. During this 28-month period, six overdose deaths occurred.[34]

Similar to DTC, this specialty court selects individuals with opioid-related, nonviolent criminal charges. Potential participants are screened using a brief survey that assesses if the individual is at-risk for opioid overdose death. After the individual voluntarily agrees to participate in the program, he or she completes a bio-psycho-social screen with OIC case managers. Substance use treatment decisions are immediately made following the survey results.[35] The goal of the OIC program is to place participants in drug treatment within 24 hours. Treatment options include inpatient drug treatment or medication-assisted therapy (MAT) at a community-based outpatient facility.[34] MAT is an evidence-based substance use treatment approach that uses medications such as methadone, buprenorphine, and naltrexone to prevent opioid cravings, withdrawal, relapse, and overdose.[36] Providing individuals with accelerated access to MAT is a critical first step to treating OUD.[37]

Staff of OIC programs monitor participants through daily check-ins with court staff and frequent urine toxicology testing. The length of program participation varies by individual; however, during the initial 90 days of the program all participants receive the most intensive treatment and monitoring. In exchange for participation, criminal charges are typically reduced or dismissed. After the 90-day period, a plea negotiation occurs. Some individuals may transfer to Buffalo's traditional DTC to receive additional monitoring. These decisions, however, are unique to the individual's needs and circumstances.[34] Participants who complete the program and have a complete dismissal of their criminal charges are helped with planning a continuation of their substance use treatment after their graduation from OIC.[38]

Traditional DTCs and OICs have distinct differences. The primary difference is that traditional DTCs typically provide limited or delayed access to MAT whereas most OICs offer universal and immediate access.[39] A survey of 103 DTCs found that only 56% offered MAT.[40] This number has recently increased in response to the opioid crisis; however, there is still substantial need for DTCs to provide MAT to offenders with OUD.[41] Some DTCs also enforce MAT guidelines that have questionable clinical significance, such as requiring new court participants who are taking MAT to slowly withdraw from their medication, embracing the idea that in order to graduate from DTC, an individual must abstain from using all substances.[42] Withholding MAT access can lead to unintended consequences, such as driving individuals to purchase opioids illegally to avoid withdrawal. For DTCs who do offer MAT options, it frequently takes substantial time for participants to receive medication due to long waiting lists.[42] A second key difference between DTCs and OICs is program length and intensity of interactions. Typically, DTC participation can average 12–18 months, while OIC programs are shorter in duration of only 90 days. Similarly, the frequency and intensity of court visits also vary. In Buffalo, the DTC approach involves weekly court visits compared to daily visits in the OIC program. Third, in the OIC model, participants agree to frequent and random drug testing compared to the DTC model with less frequent urine drug screening often because of the lower intensity of court visits. Finally, OIC participation is pre-plea, meaning that a participant's criminal charges are temporarily paused while the person partakes in the OIC program. On the other hand, DTC is usually post-conviction.

To date, no rigorous evaluation of OIC has been performed. This gap in evaluation is problematic, as there is no formal evidence that OIC is a useful tool in reducing opioid overdose deaths and substance use behaviors. Additionally, there is little mixed-methods research comparing OICs to traditional DTCs.

Proposal Approach

OIC can prevent opioid overdoses and provide substance use treatment to a significant number of people with OUD in the Buffalo criminal justice system. We hypothesize that participants will have better outcomes than those who participate in a traditional DTC, as the court is geared specifically toward people with OUD. Predicted outcomes include a lower number of opioid overdoses and lower rates of reported substance use. Additionally, we hypothesize that individuals who have participated in both OIC and traditional DTC will prefer OIC due to increased access to substance use treatment and will report more barriers to substance use treatment in a traditional DTC. Using a mixed-methods approach, the proposed research intends to achieve the following aims:

Aim 1. To evaluate whether OIC or traditional DTC is more effective in reducing rates of opioid overdose.
Aim 2. To evaluate whether an OIC program or traditional DTC is more effective in reducing rates of substance use.
Aim 3. To qualitatively assess barriers and facilitators to substance use treatment among current OIC participants who have had prior traditional DTC experience.

To understand and compare the effectiveness of OIC and traditional DTC, this study will use a mixed-methods approach. Individuals in OIC who have participated in OIC and traditional DTC are a unique population. Collecting qualitative data from this population will allow for a greater nuanced understanding of the first-hand experiences of these individuals and make comparisons between structures and functions of the two courts. Although interviews are useful in understanding participant experiences, Aims 1 and 2 will be achieved by obtaining quantitative data on substance use behaviors and opioid overdoses. Therefore, a mixed-methods approach is ideal with prior work demonstrating feasibility.[43,44]

Recruitment and Sampling

The proposed timeline for this study is 2 years (24 months). The first 3 months will allow the study to obtain Institutional Review Board approval. Recruitment will occur during month 4 through 8 at the Buffalo City Court. A total of 150 adults from the Buffalo OIC (n = 75) and the Buffalo DTC (n = 75) will be recruited.

It is projected that 10% of potential participants approached will not agree to participate and 60% of traditional DTC participants will not have an OUD. To enroll 150 participants in both arms, 264 individuals will be screened in the traditional DTC arm and 85 in the OIC arm. We anticipate 10% of enrolled participants will drop out through the 1-year follow-up period (approximately 5% from each arm). Recruitment will occur until the target enrollment is reached in both samples.

Potential participants will be approached at the Buffalo courthouse. Researchers will recruit a convenience sample by approaching individuals who actively attend OIC and the Buffalo DTC. Screening and enrollment will happen on-site at the Buffalo courthouse. Study protocol will ensure that no participant is double-counted, as some individuals may be participating in traditional DTC and OIC simultaneously. Inclusion and exclusion criteria are detailed in Table 1.

Participants will engage in both quantitative and qualitative study activities over a 12-month period. The first study visit will occur at the time of enrollment in a private space within the Buffalo courthouse. Following the initial visit, participants will complete second to fourth study visits in 4-week intervals. The fifth study visit will occur 26 weeks after enrollment and the sixth visit will occur 52 weeks after enrollment. Study visits will occur more frequently during the first 90 days in order to capture data during the 12-week intensive phase of OIC. Second to sixth study visits will occur at a university research center in close proximity to the courthouse.

Table 1. Research Study Inclusion and Exclusion Criteria.

Inclusion criteria	• Adult aged 18 years or older • History of opioid dependence • Enrolled in either the Buffalo DTC or OIC • Able to demonstrate the ability to consent • Not concurrently participating in the Buffalo DTC and OIC
Exclusion criteria	• Inability to meet inclusion criteria

Quantitative Data Collection

We will collect court and participant self-reported data. Questionnaires are specifically chosen to assess the seven domains found in the public health ecologic framework for opioid use. For example, we will use the Addiction Severity Index questionnaire to collect self-reported information on nonfatal overdoses, substance use behaviors, substance use treatment experiences, criminal history, desire to receive substance use treatment, and family/social violence experiences. In addition, we will secure an agreement with the court staff to extract and provide fatal overdose data to the research team, which will include participant demographic characteristics, substance use treatment, and court program participation characteristics. These data elements are outlined in Table 2.

Qualitative Interviews

In order to better understand each participant's court experiences for Aim 3, we will conduct private, semi-structured interviews with 15 individuals in the OIC sample who have also participated in traditional DTC. Upon enrollment, participants in the OIC sample will be asked if they have ever participated in traditional DTC prior to beginning OIC. Those who have participated in traditional DTC will be asked to complete a 30-minute semi-structured interview with study staff. Due to the specificity of the interview topic, 15 interviews will provide data saturation. Qualitative interviews will assess barriers and facilitators to substance use treatment among participants who are currently in OIC and who have had prior traditional DTC experience. This purposeful selection process will allow only those who have experienced both traditional DTC and OIC to participate in the qualitative interview. By collecting this qualitative data, inferences can be made about the barriers and facilitators to substance use treatment in each court program.

Participant Compensation

To enhance retention, participants will receive $5 for providing updated contact information to study staff in-between research visits, $25 for first through fourth visits, and $50 for fifth and sixth visits for a total of up to $225. The 15 participants selected to complete the qualitative interviews will receive an additional $25.

Data Analysis

An initial analysis will compare baseline differences between the two groups. Self-reported nonfatal overdose and court-provided fatal overdose data will be analyzed. A chi square test will allow us to establish a statistical association between overdose death and court program group. Self-reported substance use behaviors reported throughout the study will be analyzed. Using this data, composite scores will be calculated by determining the difference between participants' initial and last reported substance use. An increase in days will indicate an increase in substance use and a decrease in days will indicate a decrease in substance use. These scores will be used to determine how rate of substance use changes over time. At the end of the study, mean scores for each court group will be calculated to determine the average change

Table 2. Data elements to be collected.

Domain	Description	Data Source	Timeframe
Primary Outcomes			
	Total number of fatal overdoses	Court records	End of data collection period
Total number of nonfatal overdoses	Number of nonfatal overdoses in the last 30 days	Addiction Severity Index[45]	Visits 2–6
Substance use behaviors	Lifetime and past 30-day alcohol and drug use. Questions are broken down by substance and legal/illegal access. The following drugs are measured: alcohol, heroin, methadone, other opiates/analgesics, barbiturates, other sedatives, cocaine, amphetamines, cannabis, hallucinogens, and inhalants. More than one substance per day is also measured. Participants will indicate the years they have used each substance, the days they have used the substance in the last 30 days, and the route of administration of each drug (oral, nasal, smoking, non-IV injection, and IV)	Addiction Severity Index[45]	Visit 1/Baseline-6
Covariates			
Demographics	Race/ethnicity, age, gender, highest level of education	Demographic survey	Visit 1/Baseline
Housing status	Housed, temporarily housed, not housed	Demographic survey	Visit 1/Baseline
Employment status	Full-time, part-time, unemployed	Demographic survey	Visit 1/Baseline
Payer information	Uninsured, Medicaid, Medicare, private, Veterans, Indian Health Services, TRICare/military health care	Demographic survey	Visit 1/Baseline
Marital status	Not married, married, divorced, widowed, separated	Demographic survey	Visit 1/Baseline
Public assistance utilization	Food assistance, Supplemental Security Income, social security, food stamps, any other public assistance	Demographic survey	Visit 1/Baseline
Mental health	We will use a short-form version of the Depression Anxiety Stress Scale to evaluate mental health	Depression Anxiety Stress Scale (DASS-21)[46]	Visit 1/Baseline
Healthcare utilization	We will use a modified version of the Washington State Syringe Exchange Health Survey to measure healthcare utilization, access to medical care, self-reported health, and utilization of harm reduction services, such as syringe exchange	Modified Washington State Syringe Exchange Health Survey[46]	Visit 1/Baseline
HIV & HCV	We will use a questionnaire modeled by the European Monitoring Centre for Drugs and Drug Addiction bio-behavioral survey questions for people who inject drugs.[47] Participants will report HIV and HCV screening experiences and infection status. If a participant has been diagnosed with HIV or HCV, questions will assess engagement in medical care and treatment for their disease	HIV & HCV questionnaire[48]	Visit 1/Baseline
IV drug use behaviors	We will use a questionnaire developed by the National Institute on Drug Abuse. Questions from the survey will measure information about participants' current drug use and injection behaviors	Modified Risk Behavior Survey[49]	Visits 1/Baseline-6
Substance use treatment	Lifetime inpatient substance use treatment, lifetime outpatient substance use treatment, lifetime drug and alcohol detox program experience, treatment experiences in the last 30 days, and substance use treatment in the last 30 days	Addiction Severity Index[45]	Visits 1/Baseline-6
Criminal history	Lifetime arrest history, number of arrests that resulted in convictions, and number of incarceration experiences	Addiction Severity Index[45]	Visits 1/Baseline-6
Substance use treatment desire	How important substance use treatment is to the participant at time of survey administration. How bothered the participant is by substance use problems in the last 30 days	Addiction Severity Index[45]	Visits 1/Baseline-6
Family/social violence	Lifetime and past 30-day emotional, physical, and sexual abuse	Addiction Severity Index[45]	Visits 1/Baseline-6
Overdose history	Lifetime overdose (# of overdoses)	Addiction Severity Index[45]	Visit 1/Baseline
OIC and DTC experiences	Prior and current court experiences	Survey	Visit 1/Baseline-6

in rate of substance use among participants in both groups. An independent *t*-test will be performed to determine statistical association between these mean scores of each court group.

Qualitative interviews will be transcribed from audio recordings. The research team will perform a thematic analysis and create a list of primary and secondary codes that reflect common themes discussed during the interviews. Consensus-building between the research team will produce a master list of themes. Each transcript will be coded utilizing this master list of codes for thematic analysis. This method will provide the data analysis team to assess Aim 3.

Expected Outcomes

The results from this study seek to evaluate the effects of an OIC versus a traditional DTC. We hypothesize that because of the opioid-specific treatment options offered by OIC, participants who attend the Buffalo OIC will experience fewer opioid overdoses and have lower rates of substance use compared to participants in traditional DTC. We also anticipate that a thematic analysis of qualitative interviews will reveal that participants in the OIC group prefer OIC to a traditional DTC and experience fewer barriers to treatment than they did when previously participating in a traditional DTC.

This study has several limitations. First, all data collected are from the perspective of court participants. This may exclude potential valuable information that can be gleaned by court staff, judges, and other individuals involved in the court process. For example, information about the court's processes and effectiveness that may be useful in assessing the OIC will be missed. Second, because this evaluation will compare groups in a nonrandomized manner, there is an opportunity for selection bias. Third, there is a potential for recall bias among the study participants. Fourth, it is also assumed that some participants who attend OIC have also attended traditional DTC. However, we capture these comparative experiences qualitatively in Aim 3. Finally, it could be possible that quantitative surveys and qualitative interview questions may illicit answers that are impacted by social desirability.

Future/Next Steps

This study will provide courts with data that validates the effects of OIC. Findings will allow court administrators to make informed decisions when deciding to establish an OIC. This study will also shed light on opioid users' experiences in traditional DTC and OIC. Understanding barriers and facilitators to OUD treatment among justice-involved individuals attending specialized treatment courts will inform courts on strategies to improve their programs.

Future studies will be needed to determine which OIC model is ideal for certain settings, sub-populations, and contexts. As OICs expand across the nation, it is important to understand their effectiveness. Currently, operating OICs have key differences in their structures and procedures that may impact the outcomes among OIC court participants. For example, providing immediate access to MAT may reduce opioid overdose deaths. Future studies should compare different OICs to determine which court procedures can produce the most effective outcomes. This research could influence how OICs operate and inform new OICs on how to design their programs so they use the most effective strategies.

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