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ASSISTANT SECRETARY FOR PLANNING AND EVALUATION

OFFICE OF BEHAVIORAL HEALTH, DISABILITY, AND AGING POLICY

Emergency Department Interventions for Opioid Use Disorder:

Overview of the Landscape, Key Components, and Analysis of Five Case Studies

Prepared for
the Office of the Assistant Secretary for Planning and Evaluation (ASPE)
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by
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Office of the Assistant Secretary for Planning and Evaluation

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EMERGENCY DEPARTMENT INTERVENTIONS FOR OPIOID USE DISORDER: OVERVIEW OF THE LANDSCAPE, KEY COMPONENTS, AND ANALYSIS OF FIVE CASE STUDIES

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Acronyms

The following acronyms are used in this report and/or appendices.

ASPE	HHS Office of the Assistant Secretary for Planning and Evaluation
BHDDH	Rhode Island Department of Behavioral Healthcare, Developmental Disabilities and Hospitals
CAM	Colorado Center for Addiction Medicine
COVID-19	Novel Coronavirus
DATA	Drug Addiction Treatment Act
DHHA	Denver Health and Hospitals Authority
ED	Emergency Department
EMR	Electronic Medical Record
FDA	HHS Food and Drug Administration
FQHC	Federally Qualified Health Center
HHS	U.S. Department of Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act
HIV	Human Immunodeficiency Virus
MAT-PDOA	Medication Assisted Treatment-Prescription Drug and Opioid Addiction grant
MORE	Anchor Mobile Outreach Recovery Efforts
MOUD	Medications for Opioid Use Disorder
NY MATTERS	New York Medication Assisted Treatment and Emergency Referrals
OB/GYN	Obstetrics and Gynecology
OBOT	Office-Based Opioid Treatment
OTP	Opioid Treatment Program
OUD	Opioid Use Disorder
PDMP	Prescription Drug Monitoring Program
Rx	Prescription
SAMHSA	HHS Substance Abuse and Mental Health Services Administration
SBIRT	Screening, Brief Intervention, and Referral to Treatment
SOR	State Opioid Response
STR	State Targeted Response
SUD	Substance Use Disorder
TOD	Treatment on Demand

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Executive summary

Background

The United States is facing a crisis of opioid overdose deaths. More than 70,000 people died from a drug overdose in 2019, and approximately 49,000, or 70.6 percent of those deaths, involved opioids.[1] If current trends persist, 2020 drug overdose deaths may exceed 90,000 people[2] the highest number ever recorded in the United States.[3]

For many individuals with opioid use disorder (OUD), initial contact with the health system occurs in the emergency department (ED) while experiencing an overdose or withdrawal symptoms. However, mortality after ED visits for opioid overdose is high: one study found that one in 20 patients treated for a non-fatal opioid overdose in an ED died within one year of their visit, one-fifth of them within one month of the visit.[4] One approach to address the opioid crisis is to expand treatment access through initiating treatment in the ED and linking to follow-up care. This report describes existing ED-based interventions for OUD and their evidence base; identifies key components of ED-based models to treat OUD; and summarizes findings across five case studies of ED-based OUD treatment programs regarding program structure, key components, barriers, and facilitators, to identify lessons for providers and policymakers.

Methods

Information for this report comes from three sources: a literature review, interviews with experts, and case studies of five ED OUD programs. Case studies were selected to represent successful programs with varied models and structures (e.g., health system-based, state-based, individual ED) and a range of size, urban/rural area, and region. Data collection and analysis were designed to generate actionable information for model replication. Case studies include Denver Health and Hospital Authority, Denver Colorado; Marshall Medical Center, Placerville, California; Highland Hospital, Alameda Health System, Oakland California; NY MATTERS, Buffalo, New York; and Anchor ED, Providence, Rhode Island. Virtual site visits were conducted over video conference between February and May 2021. They consisted of document review and interviews with up to nine key program staff and stakeholders from each site. Interview topics included the history of the program, financing and motivation, key components, metrics used to monitor and measure success, barriers, facilitators of success, and sustainability outlook. Interviews were analyzed and summarized by theme using a framework analysis approach.

Findings

ED-based efforts to address OUD are developing across the United States and take a range of approaches. Approaches include providing ED-based initiation of medications for opioid use disorder (MOUD) and connecting patients with ongoing care, directly referring patients to community providers for OUD treatment, and offering harm reduction services such as overdose education and take-home naloxone for emergency use. The variation in approach is driven in part by ED clinicians' and other leaders' understanding about their role in addressing OUD, and by the local treatment environment and resources. For example, some providers see the ED as a critical place to reach individuals with OUD, while other providers see OUD as a chronic condition and outside the scope of ED practice.

Evidence base for ED-based models to treat OUD

Systematic evidence for the effectiveness of ED-based efforts to treat OUD is limited but growing.[5-8] A Yale University randomized trial in 2015 compared ED-initiated buprenorphine to brief intervention and referral, and to referral alone. It showed that initiating buprenorphine in the ED is feasible and effective, resulting in follow-up treatment, at least in the short-term.[5] Several observational studies measuring process metrics and limited outcome measures suggest ED-initiated MOUD is effective in helping patients engage in outpatient treatment.[5-8] Literature and interviews indicate that over half of initiated patients are engaged in treatment at 30 days or longer in some programs. Studies are currently underway examining the role of different staffing patterns and additional longer-term outcomes. For programs studied here, metrics for examining program effectiveness are primarily process measures (initiation and short-term and longer-term engagement rates), but at least one program monitors overdose rates.

Factors motivating the development of ED-based interventions for OUD

Most often, programs are started by highly motivated clinicians, championing an approach tailored to the hospital, community resources, and patient mix. Across the five case studies described in this report, all were started by passionate ED providers who saw the potential for evidence-based treatment and recovery starting in the ED, and wanted to do more for people with OUD. ED staff report finding the work very rewarding. Several interviewees described providing MOUD as some of the most fulfilling work they do in the ED. Interviewees also noted the role of the ED-based programs in reducing stigma in the ED and embedding OUD treatment as a core component of ED services.

Key components of ED-based models to treat OUD

Because programs are relatively new and developed independently across the country, there is variation in structure and treatment approaches. Key components of ED-based OUD treatment efforts include patient identification, treatment approaches, program structure, relationships with community programs, and financing. Programs vary across these components based on implementation choices, the hospital setting, and available resources. Despite these variations, programs similarly focus on making treatment more accessible by lowering barriers such as those related to drug testing requirements and the use of multiple substances. ED-based efforts to treat OUD work well when they have reliable and accessible referral sources and the ability to provide MOUD. Ongoing treatment may be provided by hospital-based bridge or outpatient clinic, affiliated bridge clinic or community-based organizations. Some ED-based programs use peer navigators with lived experience, while others use navigators from the community who are not necessarily in recovery. Programs described in the literature and all of the case studies recognize the importance of peers or other support staff members to assist patients in navigating their care. Reimbursement is available for aspects of ED-based OUD treatment, but some services are not consistently covered by insurance (e.g., navigators).

All of the case study programs originated with grant funding or have used grants to cover some services, and most continue to be funded at least in part through grants. All plan to continue operation, though reliance on grant funding remains a risk to program sustainability. Three of the five programs studied have expanded, or are planning to expand, to address other substance use disorders (SUDs) because of

the program's perceived effectiveness with OUD and because the notion that helping more patients may improve program efficiency. In particular, identification and treatment of individuals with alcohol and stimulant use disorders are targets for expanding programs.

Barriers and facilitators

Barriers to implementing ED OUD programs include the stigma associated with OUD and MOUD; limited availability of reliable outpatient treatment and needed recovery supports; a lack of information and knowledge about OUD treatment; provider concerns about ED workflow; patients' lack of insurance; inadequate program funding, particularly for the work of navigators; and policies that limit buprenorphine prescribing.

Facilitators for program implementation include having a patient-centered, low-barrier approach that promotes the uptake of treatment; a passionate champion and expert in OUD treatment; a strong structure to facilitate communication across partners and seamless treatment; the ability to track performance; and adequate funding from sustainable sources.

Conclusions and policy implications

Several implications for policy and practice emerged from this work. ED-based MOUD is feasible and effective in helping patients engage in treatment. Building on the strength of current models, efforts are needed to make it easy for patients to obtain treatment, as they are often ready when they present to the ED. Actions to facilitate ED-initiated treatment and engagement in ongoing care include supporting the availability of treatment on demand (TOD) and 24 hour follow-up, making the culture of the ED welcoming to all patients, funding of related services such as expanding capacity for treatment in the community within days of being seen in the ED, and supporting recovery services such as housing and transportation.

Opportunities exist to facilitate program development by offering additional venues for learning collaboratives, including sharing models, challenges, and successes. These venues can also provide a forum for developing and testing guidelines and standardized measures and tools to evaluate impact more effectively. They also can serve as an important vehicle for dissemination. One program studied has already considered starting an academy to train clinicians in developing and implementing ED OUD programs.

Educational efforts are warranted for providers and the community to improve awareness and knowledge about OUD treatment options and address stigma. Unfortunately, stigma occurs among ED providers and within communities generally. However, programs and subject matter experts repeatedly report that once the community is aware of the services offered through an OUD program in the ED, they are usually well accepted and supported.

Addressing the challenges of inadequate funding of ED OUD programs presents another opportunity. Programs suggested financing models that include adequate coverage for non-clinical personnel critical to the program, such as recovery navigators or peers, is key to sustainability. The Medication Assisted Treatment-Prescription Drug and Opioid Addiction (MAT-PDOA), State Targeted Response (STR) to the Opioid Crisis and State Opioid Response (SOR) grants, originating with federal funding, were

instrumental in numerous cases to the early development of the programs that were studied. Once programs are beyond the pilot stage, they may become incorporated into hospital budgets. However, many must continue to seek grant funding. Payment models that address gaps in coverage and inadequate reimbursement are important to consider.

A systematic approach to identifying and assessing ED-based MOUD efforts is needed, including addressing the impact of key features, cost-effectiveness of programs, and sustainability. More in-depth analyses of variation in ED-based OUD programs would help inform best practices. Efforts to disseminate information about ED-based OUD treatment may help to expand programs beyond early, enthusiastic adopters. Studies of which patients to target, how best to identify patients for OUD treatment, and how best to support patients as they engage in outpatient treatment would help ED providers implement efficient and effective programs. Systematic information on patient and provider perspectives on these programs would also help improve services.

Efforts are needed to expand the availability of low-barrier MOUD in a systematic way and to support EDs that are not early adopters in offering MOUD. Additional research on barriers EDs that have not yet started offering MOUD face and how to support and encourage ED-based MOUD initiation in EDs that are not early adopters may help expand efforts. The cases included here were early and enthusiastic adopters of ED-based MOUD initiation, but many EDs do not provide MOUD. Studies might also identify where there exist the best opportunities to expand ED-based interventions for OUD, and when to use a top-down or a bottom-up approach.

Finally, most models studied are expanding beyond the identification and treatment of OUD. Programs are using the lessons from treating OUD to identify and engage patients who have alcohol use disorder or disorders related to methamphetamine and other substances. Stimulant use is a growing national problem, and interviewees feel it is important to respond. ED-based programs can draw from the experience with OUD, although specific challenges of treatment may differ. Supporting the expansion of ED OUD programs to a wider range of SUDs is a natural step already started by ED programs.

Introduction

The United States is facing a crisis of opioid overdose deaths. More than 70,000 people died from a drug overdose in 2019, and approximately 49,000, or 70.6 percent of those deaths involved opioids.[1] If current trends persist, 2020 drug overdose deaths may exceed 90,000 people,[2] the highest number ever recorded in the United States.[3]

For many individuals with OUD, initial contact with the health system occurs in the ED while experiencing an overdose or withdrawal symptoms. Mortality after ED visits for opioid overdose is high.[9] A study of patients in Massachusetts EDs found 5 percent who survived an opioid overdose died within one year of ED discharge. Among this group who died within a year, 20 percent died within one month of the ED visit, and 5 percent died within two days of leaving the ED.[4] When patients are experiencing withdrawal, they may express interest in treatment, and it is essential to provide treatment at that moment before patients go back to using opioids.[10] Thus, EDs are an important place to intervene to prevent death and a "critical entry point" for individuals with OUD to potentially access treatment.[11]

EDs are increasingly addressing OUD with medication or initial contact with treatment providers, including supports to connect with outpatient treatment. This report examines how ED-based programs to treat OUD are structured and financed and identifies lessons from established programs' experience.

The objective of this report is to address the following research questions, followed by implications for policy and practice:

1) What ED-based interventions exist to initiate OUD treatment?
2) What is the evidence base for ED-based interventions to initiate OUD treatment?
3) What factors motivated the development of ED-based interventions for OUD?
4) What are the key components of ED-based models to treat OUD?
5) What are the plans for continued implementation and sustainability of ED-based interventions for OUD?
6) How are programs assessing the effectiveness of the ED-based intervention for OUD?
7) What barriers and facilitators have programs encountered, and how have they addressed the barriers?

Background: Treatment for opioid use disorder

Most people with OUD go untreated with severe health and public health consequences.[11,12] Access to OUD treatment has improved, with medications now available from specialty addiction treatment settings and primary care and office-based prescribers. However, 80 percent of individuals with OUD do not receive treatment.[13,14] A recent study showed 95 percent of Medicaid enrollees with OUD under the age of 18, and 73 percent of those ages 18-21 did not receive timely medication treatment for OUD.[15] Provision of OUD pharmacotherapy is also low among the commercially insured, with only up to 25 percent of commercially insured individuals with OUD receiving medications.[16] There are many barriers to receiving OUD treatment, including provider availability, stigma, and insurance coverage policies.[16-20]

Reasons for low rates of OUD treatment are varied. According to the National Survey on Drug Use and Health, 95 percent of people with SUDs who did not receive treatment in the past year do not think they

need treatment.[20] Among those who perceived a need for treatment but did not receive treatment, reasons include not being ready to stop using, not knowing where to go for treatment, not having health insurance or being able to afford treatment.[20] Among those who seek treatment, provider availability, stigma, and health plan policies can be barriers to access.[16-19]

Medication is an effective, evidence-based practice for treating OUD.[21-24] While it is important to consider medication in the context of psychosocial supports, experts acknowledge that medication is still preferable in the absence of available counseling.[6] There are three approved MOUD:

- Methadone, an opioid agonist that mitigates cravings and withdrawal symptoms.
- Buprenorphine, a partial opioid agonist that mitigates cravings and withdrawal symptoms.
- Naltrexone, an opioid antagonist that prevents euphoria. Patients must be off opioids before initiating treatment with naltrexone to avoid precipitated withdrawal.

The three OUD medications are effective and cost-effective in reducing opioid misuse.[25-27,7,28-30,22,5] Clinical practice guidelines and treatment recommendations encourage pharmacotherapy as a front-line treatment.[27,31-33] Pharmacotherapy for OUD results in reduced opioid use, longer time in treatment, fewer relapses and overdoses, and lower mortality.[7,23,28,29,34,35] Societal benefits include cost reductions related to criminal activity and health care utilization. However, only 36 percent of outpatient substance use treatment programs offer pharmacotherapy for OUD.[14]

OUD medication treatment regulations

Methadone was HHS Food and Drug Administration (FDA) approved for OUD in 1972 and was the only medication available to treat OUD until the FDA approved buprenorphine in 2002.[25] Restrictions on methadone remain considerable and include dispensing solely through approved opioid treatment programs (OTPs), subject to state and federal regulations. The Drug Addiction Treatment Act (DATA) of 2000 enabled qualified physicians to obtain a waiver (frequently called an "X-Waiver") from the Controlled Substances Act allowing them to prescribe buprenorphine-containing medications approved for the treatment of OUD (referred to as office-based opioid treatment, or OBOT) to up to 30 patients.[36] The Office of National Drug Control Policy Reauthorization Act of 2006 increased patient limits from 30 to 100 patients at a time;[37] the limit later increased to 275 patients.[38] In response to requests to further raise or eliminate the patient limit, the Comprehensive Addiction and Recovery Act temporarily authorized nurse practitioners and physician assistants to prescribe buprenorphine for OUD for up to 30 patients and up to 100 patients after one year.[39] The SUPPORT for Patients and Communities Act permanently extended this authorization for nurse practitioners and physician assistants and authorized other advanced practice registered nurses (Certified Nurse Midwives, Clinical Nurse Specialists, and Certified Registered Nurse Anesthetists) for a limited amount of time.[40] In April 2021, X-Waiver requirements were relaxed to eliminate the required eight hour training and availability of counseling and other ancillary services for administering buprenorphine to 30 or fewer patients at a time.[41] Still, insufficient OBOT capacity persists, particularly in rural areas.[42-44]

Buprenorphine prescribing regulations include an exception to the waiver requirement for an emergency setting, called the "three-day rule." This exception allows a non-waivered clinician to administer (not prescribe) narcotics to "treat acute withdrawal symptoms while arranging for the

patient's referral for treatment under the following conditions: not more than one day's medication may be administered or given to a patient at one time, treatment may not continue for more than 72 hours, and the 72 hours cannot be renewed or extended."[45] Scientific evidence regarding the merits of MOUD is clear. However, access to MOUD is limited due to insufficient capacity, inadequate reimbursement, long waiting lists in many communities, lack of institutional support, inadequate patient and provider knowledge regarding OUD medications, and stigma of multiple types.[24,46]

Federal and state efforts to expand OUD treatment access

Federal and state agencies have launched initiatives to address the epidemic and enhance access to treatment in response to the increasing rate of opioid-related deaths. Federal efforts directed more than $7.6 billion toward the issue in 2019.[47] The Federal Government has dedicated funding to states to develop and implement programs specific to OUD prevention, treatment, and recovery. Expanding access to OUD treatment was a requirement of the STR grant in 2017 to "design, implement, enhance, and evaluate primary and secondary prevention using evidence-based methods proven to reduce the number of persons with OUDs and OUD associated deaths."[48,49] Some states used STR funds or the subsequent SOR grant for ED-based efforts to address OUD.[47]

At the state level, both funding and regulations have been implemented. Although no systematic documentation of programs for all states is available, both Massachusetts and Pennsylvania are examples of states devoting resources to ED-based OUD programs. In Massachusetts, over $6 million was invested in nine hospital and health systems to design and implement ED-based OUD programs focused on identifying patients, initiating treatment in the ED, and linking to community services.[50] The state has also passed a law requiring that acute care hospitals with EDs have the capacity to start patients on MOUD when they present in the ED after an opioid-related overdose. The Massachusetts Hospital Association published guidelines for all hospitals to implement such programs.[51] In Pennsylvania, the state implemented a Hospital Quality Improvement Program for OUD in 2019.[52] The first-year goal was to improve ED-based treatment of OUD.[53] This initiative offered Pennsylvania hospitals financial incentives to develop one or more of the following treatment pathways for people with OUD: ED-based initiation of buprenorphine with a warm-handoff[i] to a community provider, direct warm-handoff to a community-based provider for OUD treatment (medication or abstinence-based), a specialized protocol for pregnant women with OUD, an inpatient admission pathway for methadone and observation for buprenorphine induction.[56] The state is also promoting efforts to connect overdose survivors with OUD treatment by requiring all single county authorities to establish warm-handoff policies.[57]

Methods

Information for this report comes from three sources: an environmental scan[58] comprised of a literature search and interviews with subject matter experts and case studies of five ED OUD programs.

[i] Pennsylvania defines a warm-handoff as a seamless transition for patients from emergency medical care to specialty SUD treatment.[52] Warm-handoffs can be to any OUD treatment provider including primary care.

Environmental scan

A literature search was conducted, including peer-reviewed literature, government reports, and white papers. PubMed and Google Scholar were searched for 2015-2020 to identify articles related to the implementation and effectiveness of ED-based OUD treatment and to identify potential experts to interview. Searches used the following keywords: opioid use disorder, buprenorphine, Suboxone, medication-assisted treatment, MOUD, and ED. Reference lists in identified sources were examined to "snowball" additional sources, including those published before 2015. We identified papers that analyzed efforts to change practice, described implementation, and described barriers and facilitators to ED-based OUD treatment.

Potential subject matter experts were identified first by scanning recent conference proceedings and highly cited articles in the literature. Through initial expert interviews, additional informants were identified. Semi-structured interviews were conducted between November 2019 and January 2020 with eight emergency medicine and addiction medicine physicians and researchers who have developed or are key leaders within ED-based OUD programs. Experts were based in academic and community health centers, EDs, and addiction medicine bridge clinics,[ii] and all were part of programs that offered medication treatment for OUD. Via telephone conversations with the authors, respondents were asked to provide an overview of how their ED-based OUD treatment program worked; identify key components of the program; and identify barriers and facilitators to implementation, operation, and sustainability. The interviews were analyzed for major themes and insights using an inductive approach. Aspects of program design and key components were identified by applying a framework analysis approach to the literature and interviews.[59] Initial findings from the literature search and subject matter expert interviews are summarized in an environmental scan and manuscript.[56,60]

Case studies

Following the literature search, expert interviews, and environmental scan, five case studies of ED programs for OUD were conducted. Cases were selected to represent the range of structures among program sites (e.g., health system-based, state-based, individual ED). Data collection and analysis were designed to generate actionable information for model replication. Standard methods for case studies were used, adapted from those developed by Yin, which guides data collection, analysis, and reporting.[61]

Site Selection Criteria. Based on the environmental scan and interviews with experts, we established criteria for site selection. We proposed to interview programs that vary in stages of maturity and those that represent a range of key components, including type of intervention, location, size, and structure (statewide vs. individual ED). To facilitate selecting program sites, the authors developed a matrix of key components of programs.

Interview Instrument. The interview instrument consisted of the domains addressed in the research questions and was informed by the literature search, expert interviews, and our knowledge of the

[ii] Bridge clinics are easily accessible buprenorphine clinics that aim to remove barriers for induction into buprenorphine treatment and help connect patients to long-term OUD care.[57,58]

unique factors and barriers to initiating and continuing OUD pharmacotherapy (see Appendix 3). The instrument included major topics and probes to address them in more detail. Major topics included: key components of the programs; background on the development and motivation for starting the program; linkages with other providers or services and how they have been developed and nurtured; any program evaluations that have been conducted; funding and sustainability plans; and barriers and facilitators experienced.

Recruitment of Study Sites. Several nationally recognized leaders of ED-based OUD programs were enlisted as advisors to help facilitate recruitment through contacts with programs and national organizations such as the American College of Emergency Physicians. To recruit sites, an author emailed the program director, summarizing the project and why their program may be an important model to include. Each site was offered an honorarium of $2,000 for their time.

Participating sites. Ten potential case study sites were initially identified. Sites were reviewed with ASPE and selected based on established criteria: range of models, maturity, size, urban/rural area, location. Five sites were selected; one declined and was replaced. Participating sites are identified in Table 1.

Table 1. Case Study Sites

Program	Location	Description
Denver Health and Hospital Authority (DHHA)	Denver, CO	Hub-and-spoke model; includes a range of disciplines
Marshall Medical Center	Placerville, CA	Rural program noted by experts as successful; community hospital
Highland Hospital, Alameda Health System	Oakland, CA	One of the largest programs, very successful. Most experts referred to this program
NY MATTERS	New York	Statewide program, operates in 17+ EDs; initially foundation-funded
Anchor ED	Rhode Island	Statewide effort, community provider based

Conducting Case Studies and Data Collection. All site visits, consisting of interviews and document review, were conducted remotely due to COVID-19. Site leadership identified key persons for interviews, which were supplemented as needed to provide a complete picture of the program. Semi-structured interviews were conducted with ED providers, program developers, program staff, and other key stakeholders, including state representatives as relevant. Interviews were recorded and transcribed, and detailed notes were taken. Interviews took 45-60 minutes and were conducted with up to nine staff and stakeholders per site. Secondary data, including reports and internal documents, were requested from all sites. Site summaries were prepared and shared with programs for validation (Appendix 2).

Data Analysis. A framework analysis approach was used to code, summarize, synthesize, and sort qualitative data collected for analysis. Themes were identified initially based on the environmental scan and research questions; additional themes were identified inductively through analysis of the interviews. Interview findings were analyzed by theme and summarized by research question.

Findings

Overview of ED-based efforts to address OUD

ED-based interventions for OUD are being implemented across the US

Efforts include a mix of approaches:

- Initiating medication for OUD in the ED.
- Directly referring patients from the ED to community OUD treatment.
- Engaging in harm reduction approaches including education about safer use and naloxone distribution.

ED-based efforts to address OUD are developing across the United States and take a range of approaches, including providing low-barrier[iii] ED-based MOUD and connecting patients with ongoing care, directly referring patients to community providers for OUD treatment, and offering harm reduction efforts such as providing overdose education and naloxone as a take-home emergency medication. This variation in approach is driven in part by ED physician understandings about their role in addressing OUD. Some providers see the ED as a critical place to reach individuals with OUD, while other providers see OUD as a chronic condition outside the scope of the ED.

Within the broad categories of ED approaches to OUD, there are various key program components that may influence program reach and effectiveness. Some EDs may also engage in preventive measures, such as reducing the use of opioid medications in the ED to prevent individuals from becoming dependent; these are beyond the scope of this report.

This report focuses on ED efforts to provide MOUD and connect patients with ongoing care. ED-initiated MOUD is recommended by federal agencies,[62-64] but programs are implemented inconsistently across the country.

The evidence base for ED-based models to treat OUD

Evidence of effectiveness of ED-based medication initiation

Evidence base for ED-based interventions for OUD

- A randomized trial found higher rates of treatment engagement among patients started on buprenorphine in ED than among those receiving only a referral.
- Other studies are retrospective, and lack comparison groups.
- Several studies are underway.
- Evidence is growing.

Existing evidence of the effectiveness of ED-initiated buprenorphine treatment is based on one randomized trial, a randomized pilot study, and several smaller observational studies. In the randomized trial of 329 individuals in a single hospital, ED-based initiation of buprenorphine with referral to primary care was compared to usual care approaches of referral to community treatment and brief intervention and referral. The study found higher rates of clinician-reported treatment engagement at 30 days

[iii] A low-barrier approach to treatment in this context may be defined as having the following qualities: (1) Same-day treatment entry; (2) Harm reduction; (3) Flexibility; and (4) Wide availability in places where people with OUD can be treated.[57]

following the ED visit among individuals randomized to the buprenorphine group compared to the referral-only or brief intervention and referral groups (78 percent vs. 37 percent and 45 percent, respectively).[5] Among the 74 percent of patients for whom the authors were able to obtain information on past seven day drug use, the buprenorphine group reported larger declines in drug use than the other groups.[5] There were no differences among groups in urine drug screen outcomes among the 67 percent of patients for whom this data was available. Further analyses followed 88 percent of the randomized sample to measure outcomes at two, six, and 12 months. Similar to the 30 day results, at 60 days, individuals randomized to the buprenorphine group were more likely to be engaged in treatment compared to the referral-only or brief intervention and referral groups (74 percent vs. 53 percent and 47 percent, respectively).[65] No differences were identified in treatment engagement at six and 12 months after randomization or in secondary outcomes of drug use and HIV risk behavior among the three groups.[65] Additional analyses of the same effort also found ED-initiated buprenorphine to be cost-effective compared to referral and to brief intervention and referral.[66]

Recent studies conducted in real-world settings demonstrated the potential impact of ED-initiated buprenorphine and referral to a Bridge Clinic. Among 269 patients with OUD diagnoses who received an initial dose of buprenorphine in the ED and completed an initial consultation with a Bridge Clinic, there was a 42 percent decrease in ED visits over the following six months.[67] A small study of 19 individuals with OUD who received ED-initiated buprenorphine treatment found that 63 percent of patients kept their initial outpatient appointment, and 75 percent of those individuals were still engaged in treatment after 30 days and 33 percent remained engaged at six months.[68]

Evidence of effectiveness of ED-based peer support services

Peer support services for SUD delivered in the context of EDs refers to services provided by individuals with lived SUD recovery experience. Support services provided by peer navigators[iv] include, for example, education, assertive outreach, and assistance overcoming barriers to treatment such as transportation or childcare. Peer support services can be implemented both as part of a comprehensive program of ED-based OUD treatment that includes medication initiation and as a standalone intervention to help connect patients to outpatient treatment. There are few studies of ED-based peer support services for individuals with OUD. A randomized controlled trial of ED-based peer supports for OUD is currently underway, but results are not yet available.[70] However, existing research shows that peer support services are feasible to implement in the ED and acceptable to patients.[71] In an observational retrospective cohort study of peer supports in an ED, Samuels (2018) identified similar rates of initiation of medication treatment between patients working with a peer and those who were not and shorter time to treatment engagement among those with peer supports.[72] A pre-post study of this effort using medical record review found patients are more likely to be discharged with a referral to treatment when they meet with a peer.[73]

[iv] A peer navigator is a person who brings the lived experience of substance use recovery, combined with training and supervision, to assist others in initiating and maintaining recovery and helping to enhance the quality of personal and family life in long-term recovery.[69] Peer navigators may also be referred to as peer recovery coaches or peer specialists.

"They were coming to the [hospital] door in the wee hours of the night; they were lining up. And we know that if you can't get into a treatment program when you come in, your chances of coming back are really low, and the dangers of fatal overdose increase over time." - Recovery services administrator

"I became interested in patients struggling with substance use disorder and identifying a coherent population health strategy to address it." - Hospital administrator

Evidence for ED-based harm reduction efforts

Although it is not specifically treatment, ED-based naloxone distribution is an important harm reduction function of EDs and appeared throughout the literature search. Several studies show it is feasible to distribute naloxone to patients leaving the ED and that patients are accepting of naloxone.[74-76] However, uptake of naloxone distribution by EDs is low.[76,77] The low uptake may be due to the additional burden to ED workflow,[77,78] and to limited evidence of the full impact of naloxone distribution because of challenges with following patients after they leave the ED.[77] However one study that was able to follow a small number of patients reported that 16 percent (6/37) of kits were used to reverse an overdose.[79]

Additional efforts and studies underway

Several efforts are currently underway to more rigorously study ED-based approaches for OUD. A pragmatic multi-site cluster randomized trial is currently underway in Indiana.[80] The ANCHOR trial of peer support for individuals presenting to EDs is underway in Rhode Island.[70] The NIDA Clinical Trials Network is studying an implementation facilitation model to test whether it improves ED-based treatment of OUD in four urban EDs.[81] The Massachusetts Health Policy Commission is funding an evaluation of nine hospitals' efforts to expand ED-based treatment.[50]

Beyond these efforts, many additional ED-based programs are emerging across the country. However, because programs are often developed by individual providers and hospitals, clinicians report that their focus is on patient care rather than formally evaluating and publishing or otherwise disseminating their outcomes.

Factors motivating the development of ED-based interventions for OUD

Beyond the unifying backdrop of tens of thousands of opioid-related deaths in the United States, additional local factors motivated the development of ED-based interventions. In all case studies, there was a champion in the ED. All five cases started with one or two providers who obtained their DATA waivers to prescribe buprenorphine and worked through the process of establishing induction protocols and developing connections to outpatient treatment for a small number of patients. Inspiration for most of these starts came from the randomized trial[5] and the Vermont hub-and-spoke model.[82] In some cases, the ED champion(s) had a partner champion from the hospital administration.

Many of the cases focused first on medication for treating OUD, while at least one (Anchor ED) started with a broader approach of embracing "many roads to recovery." In most cases, an informant mentioned the desire to meet patients "where they are." In all cases, when other staff in the ED saw first-hand the improvement in patients' lives, the reduced number of ED visits, and the concrete help

they could offer, the will to expand these programs increased dramatically. Providers expressed finding this work very rewarding. One explained, "Giving a patient with OUD, who feels very powerless, the ability to pick which clinic they want to go to, and guarantee the clinic will take them…is unbelievably empowering."

New funding was also essential for these small initial efforts to grow. HHS Substance Abuse and Mental Health Services Administration (SAMHSA) grant programs including the MAT-PDOA and STR/SOR grants played an essential role at this juncture, often enabling the official "pilot" stage and protocol development for these programs. With additional funding from city, county, state, hospital, and private grant sources, most programs scaled to 24/7 or nearly 24/7 OUD treatment services and the models of today.

Key components of ED-based models to treat OUD

Key components of ED-based MOUD initiation efforts were identified through literature review and key informant interviews and are described in Table 2. Both in the literature and across the case studies, programs vary widely on each component.

Patient identification. Patients may be identified when they come in for overdose, the ED may conduct screening or use some type of algorithm to identify patients, or patients may come to the ED in withdrawal and looking for help with OUD (especially if it is known in the community that the ED provides treatment). In the randomized trial of ED-initiated MOUD,[5] 9 percent of patients were identified following an overdose, 66 percent were identified through screening, and 34 percent self-identified -- often presenting in withdrawal and seeking treatment.

According to interviewees, a program's approach to patient identification affects MOUD uptake levels and influences the amount of work involved in encouraging patients to start MOUD. Programs that screen for OUD and ask all patients with possible OUD if they are interested in treatment will have a larger base of patients identified than those who include only patients requesting treatment. The approach to identification is also likely to influence evaluation results because programs will vary in the type of patient they identify and whether patients are likely to start treatment.

Treatment approach. Programs vary in their treatment approaches and may initiate buprenorphine treatment in the ED, send patients home with a prescription for buprenorphine for home induction, or offer a warm-handoff to a bridge clinic for initiating treatment. Bridge clinics are usually located close to the ED and may be part of the hospital system. Although bridge clinics are usually intended for short-term treatment, interviewees reported that patients could receive ongoing care there if desired.

Program structure. Program structure includes the system within which the program operates (e.g., free-standing hospital, integrated health system), where the program is based (e.g., ED, hospital behavioral health or addiction medicine department, community-based organization), the staff engaged in OUD treatment (e.g., physicians, nurses, social workers, recovery navigators), availability of these staff (e.g., hours treatment is available, navigators based in the ED or accessible through other means), and the model for coordinating care beyond the ED (e.g., hospital-based bridge clinic, warm-handoff or referral to community-based treatment).

A critical component of staffing is the use of non-clinical staff such as recovery navigators,[v] including peer navigators. Recovery navigators are trained in engaging patients and helping them navigate through the care pathway. Recovery navigators may also work to secure additional resources or social supports if needed. The structure includes whether the recovery navigator is employed by the hospital or a community-based organization and the department where they work in the hospital (ED or other).

Table 2. Key components of ED-based interventions for OUD

Key feature	Description	Examples
Patient identification	How are patients identified in the ED as possibly needing OUD treatment?	Screening all ED patients, individual clinician identification, real-time EMR-based algorithms to flag potential cases, patient self-identification in response to community outreach or signs and pins posted throughout ED
Treatment approaches	How are OUD treatment services delivered?	Offer medication vs. only referral to community-based treatment; Medication typically used (buprenorphine vs. others); initiate in ED or provide buprenorphine take-home doses or warm-handoff to hospital-based bridge clinic
Program structure	How is the ED-based program structured (e.g., hours, staffing, coordination)?	Capacity, 24-hour services vs. shorter hours; model to support coordination (e.g., navigators embedded or available, involvement of hospital-based social workers or clinicians); how programs coordinate care beyond ED; health system includes an outpatient OTP or hospital-based bridge clinic
Relationship with community treatment programs	How does the program integrate with other community programs?	Availability of outpatient treatment in the community, the strength of connection with an outpatient partner; warm-handoff or referral to community partner; follow-up strategy with the patient and/or community partner; actively working to partner with social services to identify eligible patients
Program financing	How mature is the program, how is it financed, is it sustainable?	Individual hospital funded, a state program, federal funds

Relationship with community-based treatment programs for follow-up. To connect patients with ongoing care, EDs facilitate warm-handoffs to specialized treatment providers, including hospital-based bridge clinics and community-based outpatient providers. Interviewees emphasized that ED providers need reliable community treatment partners so that they will not have to spend a lot of time searching for outpatient treatment and will not get pushback from community treatment providers to which they refer patients.

Program financing. ED-based buprenorphine initiation is generally reimbursed by insurance. However, employing recovery navigators and other infrastructure may not be covered by insurance and frequently require additional funding. Often programs are grant-funded; many interviewees reported using

[v] Recovery navigators are non-clinical staff who support individuals in their recovery by providing care management and helping patients navigate the health care and social service systems to support treatment engagement and recovery. They may also be called recovery coaches or recovery specialists. In this report, the term "peer navigator" refers to someone with lived experience of substance use recovery while the term "recovery navigator" is more general and refers to individuals who may or may not be in recovery themselves.

SAMHSA STR/SOR funding to cover expenses associated with waiver training and employing navigators.

Examples of how case study programs approach key components

Each case study adapted key components to the needs and resources of their health system and community. Table 3 and the descriptions below summarize the case study sites by each key component.

Patient identification. Two programs screened patients in the ED; all programs accept patients who self-identify requesting treatment, and two programs encourage self-identification by advertising the program through signs throughout the ED and pins and badges that staff wear. Highland Hospital relies entirely on patient self-identification. The Highland Hospital ED has signs that read, "If you are struggling with pills or heroin, we can start you on buprenorphine today."

Similarly, most patients who start medication treatment through the DHHA ED come to the ED in withdrawal from opioids and seeking treatment. One interviewee at the DHHA program reported the program is "Patient-driven; patients are not really approached by doctors." The Marshall program takes a mixed approach. An interviewee at Marshall Medical Center reported at least 50 percent of patients who start MOUD in the ED self-identify, but the hospital does screen patients for OUD, and providers will ask if patients are interested in treatment. Other programs rely entirely on individual provider discretion. For example, the Anchor ED program, which is available to 11 hospitals in Rhode Island, does not advertise to patients but conducts outreach to ED staff, reminding them that the Anchor ED services are available.

Treatment approaches. ED-based programs also vary in their approach to treating OUD in the ED. Three of the ED-based programs we examined (Denver, Marshall, Highland) focused on initiating medication in the ED using buprenorphine. The statewide programs (NY MATTERS and Anchor ED) operate differently. NY MATTERS partners with EDs that initiate patients on buprenorphine and provides the MATTERS technology and network, which allows those EDs to connect patients with ongoing community-based treatment. The Anchor ED program provides peer supports to patients in the ED. If patients are interested in medication treatment, Anchor ED will link patients to outpatient treatment that includes medication as well as treatment that does not, acknowledging that there are many paths to recovery.

Specific protocols for the initial induction of medication for OUD also vary across programs. Programs frequently develop their own protocols for treatment. While some organizations have developed guidelines to initiate OUD medication in the ED, there is no national standard for starting OUD treatment in US EDs.[83] Some physicians find the recommended doses of buprenorphine for induction are too restrictive and low and that patients are more likely to agree to treatment if they receive medication earlier in their withdrawal experience. The American College of Emergency Physicians reports that comprehensive ED buprenorphine dosing data are not available.[83]

EDs that offer medication treatment for OUD may administer the medication in the ED or, if a patient is not yet in withdrawal, may keep the patient for several hours and then administer medication, send the patient home with the medication, or issue a prescription for the medication and instructions for taking it when withdrawal progresses.

Table 3. Case study site approaches to key components of ED OUD programs					
Site	**Approach**				
Case study site	**Structure**	**Patient identification**	**Treatment approaches**	**Relationship with community programs**	**Financing***
Denver Health and Hospital Authority (DHHA)	Hub-and-spoke; integrated team across ED & behavioral health departments, other spokes	Patient self-identification, screening, community-based information campaign	Initiate medication in ED & receive next day appointment	Most patients are linked to care within the DHHA system	Initially federal grants, now hospital funding
Marshall Medical Center	Run by ED physician assistants, nurse practitioners, navigators	Patient self-identification, screening, signs posted in ED, community outreach	Initiate in ED and schedule follow-up appointment w/ partners	Partners w/ hospital's outpatient SUD clinic & 4 community health centers	State & federal grants
Highland Hospital	Run by ED physicians, w/ navigators; close relationship w/ affiliated bridge clinic	Patient self-identification; signs, pins, information posted in ED, community outreach	Initiate in ED & warm-handoff to bridge clinic	Bridge clinic is an "extension" of ED	Initially grant-funded; now hospital funding
NY MATTERS	Statewide referral network & electronic platform; connects patients in ED & other settings w/ community-based treatment	Varies by partner site	Initiate in ED or provide Rx for home induction & schedule outpatient appointment	Partners with community-based outpatient treatment providers across the state; requires partners to sign Mission, Vision, Values statement	State and federal grant funding
Anchor ED	Operated by a community-based organization; connects ED patients w/ peer recovery services	Varies by hospital	Peers connect patient w/ community-based treatment and recovery resources	Partnerships with several other community organizations	Started with donations, now funded with state and federal grants
**All programs bill insurance where possible. This column refers to financing in addition to health insurance.*					

Program Structure. The cases we examined operated within a range of systems from rural free-standing hospital to hub-and-spoke model[vi] in an integrated health system. The type of system in which the program operates influences how the ED connects patients with ongoing treatment. The Denver program, operating within an integrated health system and a hub-and-spoke model, was able to connect patients with an outpatient clinic in the DHHA system and did not have to establish relationships with outside community providers. Marshall Medical Center is a free-standing rural hospital, and patients are connected with either the outpatient program at the hospital or one of several community-based organizations geographically distributed across a large area. Highland Hospital connected patients to a bridge clinic that is not part of the hospital system but is located near the hospital and staffed with people who also work in the Highland ED. The key in each system is strong communication within the team and with the outpatient treatment sites.

The program structure also includes the organization that runs the program. Four of the case studies are programs led by hospital-based staff (ED providers, physician or physician assistant), and one is run by a community-based provider treatment organization. ED providers reported that sometimes the community-based organizations approach OUD differently, such as focusing less on medication treatment.

In addition to organizational structure and program leadership, program services and staffing are important aspects of program structure. All ED-based programs use support staff to help patients navigate through the ED visit and connect with continuing care. Some programs provide additional services beyond helping patients connect with ongoing care, for example, assisting patients with accessing housing services or transportation.

Three of the programs studied used navigators or peer navigators to connect patients with continuing care; one program reported using hospital social workers and behavioral health clinicians rather than navigators for this particular function. Programs vary in whether the navigators are peers with lived experience or individuals from the community who are not in recovery themselves.

Table 4 shows the role of navigators for each case study site. Navigators usually serve as a liaison with the patient, in some cases being brought in very early upon a patient's admission to the ED to make initial contact with a patient who is deemed likely to need treatment or to follow up after a clinician has discussed treatment with a patient. Often it is the navigator that is responsible for creating an atmosphere in which patients choose to seek treatment.

Navigators may be embedded in the ED, as is in the case with Marshall and Highland, or they may be on call within minutes, as in Anchor ED's program. Several interviewees reported that having navigators embedded in the ED, rather than on call, was more efficient and seamless. While acknowledged by all as critical to the success of ED OUD programs, it was noted that sometimes peer navigators can face

[vi]The hub-and-spoke model is a system of care in which a hub (i.e., ED, specialty SUD treatment program, etc.) acts as a centralized referral source, connecting patients to a network of providers who provide care to individuals with chronic conditions (i.e., OUD).[82]

barriers to working in the ED and may not always fit with the ED culture. For example, interviewees noted some peer navigators based in the ED have difficulty passing criminal background checks required to work in the hospital. Stigma among clinical staff regarding OUD was also reported to make it difficult to collaborate. Finally, respondents reported that in some cases, peers are not advocates for MOUD and instead promote abstinence-based recovery, creating challenges for clinicians who are poised to initiate MOUD.

Table 4. Role of peers and navigators by case study site

Denver Health and Hospital Authority	• Based in the behavioral health outpatient clinic; generally peer navigators. • Help patients complete enrollment paperwork. • Facilitate scheduling clinic appointments and arranging other services (e.g., transportation, housing, detoxification services).
Marshall Medical Center	• Based in the ED; generally peer navigators; knowledgeable about treatment system and aim to be experts in navigating the system. • Acts as a link between patients, ED, clinic, and physicians. • Respond to consult orders from throughout the hospital, discuss treatment options with patients. • Link patients to the local clinic or clinics in their geographic area. • Facilitate warm-handoffs to care. • Follow-up with patients who receive a referral.
Highland Hospital	• Employed by the hospital and embedded in ED; generally not peers. • Recruited from a mentoring program for underrepresented students groups (high school and college who are from the community). • Meet with patients in the ED to take a history and assess needs/desires for treatment; report back to ED physician. • Helps to assure that the patient's needs are met (food, medication, etc.). • Provides connection to social services and resources, including bridge clinic. • Responsible for follow-up with the patient after discharge from the ED.
NY MATTERS	• The patient chooses whether they want to be connected to a peer navigator. • If yes, the peer organization affiliated with the hospital is notified. If the hospital does not have a peer organization, the state peer organization affiliate is notified. • Structure and responsibilities vary by hospital/organization.
Anchor ED	• Employed by the social service agency that runs the Anchor ED program and are peers in recovery. • ED reaches out to Anchor when a peer is needed in the ED. • Responsible for meeting patients in the ED within 30 minutes of ED's call. • Try to build understanding and share lived experiences with patient. • Discuss patient's treatment options; link patients to the option they choose. • Link patient with a navigator for follow-up if desired.

Relationship with Community Programs. To connect patients with ongoing care, EDs facilitate warm-handoffs to specialized treatment providers, including hospital-based bridge clinics and community-based outpatient providers. Across the five case studies, several approaches were used. In three of the cases, the ED connected patients with an outpatient program that was part of the hospital system (Denver, Marshall) or closely affiliated with the hospital (Highland). The NY MATTERS program focuses on developing relationships with community-based organizations and connecting patients from EDs across the state with these community-based providers. The Anchor ED program is a community-based substance use treatment organization.

- In the DHHA program, a large and integrated health system, the ED connects patients with the outpatient treatment and medical services as needed available through the DHHA outpatient behavioral health department.
- The Marshall ED maintains connections with several community health centers that provide outpatient treatment and the Marshall CARES clinic, an outpatient clinic that is right around the corner from the hospital, which helps mitigate transportation challenges. The CARES clinic is affiliated with the hospital and run by the behavioral health department. Marshall staff reported that being in a rural community where everyone knows each other helped to facilitate communication and relationships among organizations.
- Highland Hospital patients who start medication treatment in the ED are connected with a low-barrier bridge clinic on the grounds of the hospital. The bridge clinic is not part of the Alameda Health System but is funded by state grants and works closely with the ED, including employing some of the ED staff.
- NY MATTERS develops and maintains relationships with community-based outpatient treatment providers and maintains a database of more than 250 available appointments weekly. Patients select a convenient program from the database and receive a referral for ongoing treatment.
- The Anchor ED program is a community-based program that connects patients in the ED with peer recovery specialists and stays in touch with patients following the ED visit. If patients are interested in MOUD and/or outpatient treatment, the peers and the Anchor program will help connect patients appropriately.

In addition to building relationships with outpatient treatment programs, interviewees from some case study sites describe partnerships with other community-based organizations. The NY MATTERS program partners with Walgreens and Wegmans to offer vouchers that cover patients' copayments for buprenorphine prescriptions. The program is also working on a partnership with Uber to help patients who need transportation to appointments.

> **"A woman who was 7 months pregnant called the [county] line and [was] immediately directed to Highland ED… I talked to her and figured out a plan for her to be admitted to the hospital 20 minutes later."** - ED physician

Some programs also conduct outreach to the community to share information about the availability of treatment for OUD. ED leadership from Highland Hospital actively reach out to community-based providers, "So we have partnerships with the county jail…the detox center…with the other clinics that are treating patients with substance use disorders, the Pain Clinic…[and the] Harm Reduction Coalition and then various community partners." The mayor of Denver ran a public relations campaign that "drove demand" to the DHHA program. Anchor ED is run by a community treatment program and is very much involved in state policy development and widespread education of health care organizations in the state.

The combination of structure and the relationship between the ED program and the outpatient program is key to supporting both patients and providers. Clinical experts reported having a reliable outpatient program was critical to making physicians willing to offer buprenorphine induction in the ED. When

clinicians knew they had a reliable referral network, and additional follow-up from the ED physicians or staff would not be required, they were more willing to start a patient on medication treatment.

Financing. Cases use a combination of health insurance reimbursement, state block grant funds, and private and federal grant funding to pay for ED-based programs. In most cases, initial and continued funding of ED OUD programs is through grants such as the SAMHSA STR/SOR grants. In the case of the DHHA program, funding is provided by a combination of sources, including the Denver Mayor's office. NY MATTERS program received private foundation funding. While many programs remain grant-funded, several have integrated programs into hospital or health system budgets.

Financing some aspects of ED-based OUD treatment programs is a particular concern for programs. According to interviews, billing for work by non-clinical providers, such as navigators, is not always allowed by insurance companies. Therefore, grants are often used to pay for navigators. One ED physician reported, "the least expensive staff are the hardest to pay for." One interviewee argued that if insurance companies paid a bundled rate for substance use services, this might be a good way to cover the expenses the ED incurs when treating patients, providing MOUD, and employing navigators.

The community-based program, Anchor ED, relies on block grant funding from the state and reports this is a concern. One Anchor ED interviewee commented that if hospitals could employ peers directly, it would help with sustainability.

> **"A big thing for us was to have the Medical Center recognize that this was important and sustain the clinic and the [navigators] with hard funding."** - ED physician

Finally, interviewees reported concern about low reimbursement rates for behavioral health services overall and reported that reimbursement rates do not always cover costs. One DHHA interviewee expressed frustration that reimbursement rates are higher for primary diagnosis of depression than for SUD and argued that, "If we don't have parity of reimbursement, we aren't going to have treatment."

Plans for continued implementation and sustainability

As noted, most programs started with initial seed funding from grants but have become an integral part of the ED. One expert explained once these programs are implemented and administrators see the impact, it is hard to eliminate them. One hospital reported that having the hospital system buy-in to the navigator approach has helped with financing and sustainability. An interviewee at Marshall Hospital reported that although it is difficult to finance some aspects of the program, "It will be extremely difficult to extract [the program] from our department. We can still continue services even if there isn't specifically designated grant funding for it." For programs that remain grant-funded, however, it continues to be a burden to programs to seek funding through ongoing cycles and is a risk to program sustainability.

Several hospitals are working on expanding their programs, in part as a way to improve sustainability. Most programs had plans to expand to treat substances beyond opioids in order to meet patients' changing needs and to more efficiently use resources like navigators. One program plans to implement a

patient registry, develop a training academy for providers, and improve system-wide approaches to bill for navigators.

Expansion of ED OUD programs to other substances, including stimulants and alcohol

Interviewees repeatedly noted that due to the success of the ED OUD programs, they have expanded or plan to expand their focus to address other SUDs. In particular, identification and treatment of alcohol use and stimulant use disorders was a target for emerging programs. Programs emphasized that a low-barrier approach to OUD treatment includes providing treatment to those using multiple substances. Program representatives acknowledge the additional challenges that the use of these substances present: treatment is not as clearly medication-based or safe and effective as OUD medication treatment. However, expanding to other substance use was discussed near-universally among ED OUD programs studied as an important next step. As well, it was noted that expansion of the program was facilitated by the OUD program's pioneering work in reducing stigma, increasing knowledge about SUD and the populations affected by it, and creating a culture of self-efficacy among providers.

How programs are using metrics to assess their performance

Efforts to examine the effectiveness of ED-based OUD programs in the literature include a variety of patient-level process and outcome measures, as well as system-level measures of the structure of the health care system (Appendix 1). Process measures are most commonly used, primarily patient engagement with ongoing treatment at various time points following initiation of medication in the ED. Validated quality measures have been developed by the National Qualify Forum and National Committee for Quality Assurance related to OUD identification and treatment.[84] However, the studies we identified generally do not describe the use of these nationally validated measures but rather self-developed measures. Outcome measures are more difficult to track because contact generally is limited to the patients with whom the program is able to follow up.

All programs included as case studies have their own reporting procedures for internal program monitoring or for reporting to funding agencies. The detail and scope of measurement varies, although all track linkage to treatment and engagement in treatment at various time points. For example, the Anchor ED program generates quarterly reports for the state that include a range of patient demographics, substances used in addition to opioids, contact and response times for recovery specialists to see patients, and engagement. A range of analytics are produced by DHHA because the hub (the behavioral health department) and most of the spokes are contained within the DHHA. They track the throughput of patients through the entire system (e.g., not just if there was a linkage, but the part of the system where each linkage happens). A few of the cases are large enough to have dedicated staff focused on data and analytics. In addition to tracking overdoses and ED utilization, NY MATTERS collaborates with the state to use state syndromic data on overdoses to assess programmatic success and as an indicator for expansion to new hospitals.

Metrics used by programs for assessing effectiveness of ED-based intervention for OUD

- Literature focuses on process measures including initiation rates and outpatient treatment engagement rates.
- Measures are frequently obtained through patient self-report of engagement and drug use.
- Programs have a range of metrics to report activity and impact, mostly process.
- Current measures do not generally assess life experiences.

Measuring the impact of programs on patients' lives and relationships was identified as important by several interviewees. However, programs do not systematically measure patient-centered outcomes, in part because of measurement challenges. One physician mentioned the difficulty of measuring the work of non-clinical staff and challenges in measuring patient-centered outcomes. Indeed, patient-centered outcomes were generally anecdotal. For example, one recovery specialist mentioned feeling motivated when they are "able to see the incredible progress of individuals that sustain recovery and change their lives." An ED nurse referred to patients "being able to get their quality of life back," while an ED doctor said, "if patients show up again, we presume they like the service." One exception was at Marshall, where the program resulted in changed obstetrics department policy, and they actively tracked the percent of mother-baby dyads kept together among mothers who gave birth to a baby with neonatal abstinence syndrome.

Impact of the COVID-19 pandemic

Changes during COVID-19 altered some activities but also led to additional insights. For instance, it was clear that in spite of the additional burdens place on EDs by the pandemic, the programs studied remained in effect and continued to identify and treat patients. Programs quickly pivoted to adjust to the pandemic by working remotely with patients for treatment and follow-up. This suggests that the ED OUD programs are very much an important part of the work of EDs, particularly since COVID-19 has been accompanied by an increase in opioid overdoses.

Barriers and facilitators to ED-based OUD efforts

Barriers to offering OUD treatment in EDs include stigma, lack of social supports, availability of treatment follow-up, and funding. These all contribute to the lack of availability of outpatient treatment services and create challenges. Interviewees also identified several facilitators to implementing ED-based OUD treatment and identified approaches to overcome some of the barriers identified. These approaches include being patient-centered, lowering barriers to treatment, having a champion and a knowledgeable expert in the ED, building relationships with community partners to support continuity of care, facilitating communication between ED and outpatient programs, offering provider OUD education, and funding.

Barriers to success

Stigma associated with opioid use disorder and patients with OUD

Stigma towards patients with OUD and toward MOUD remain pervasive problems even in the most successful programs, both among providers and in the community. Stigma among ED providers may result in their being unwilling to seek training to prescribe buprenorphine, leading to less availability of MOUD. It also may lead to staff making patients feel less welcome in the ED.[85] In the community, stigma related to MOUD can be an important factor limiting provider referrals to MOUD and reducing acceptance of MOUD by patients. Stigma against people with OUD also results in decreased community support for programs, both in the ED and elsewhere.[86]

Stigma results from, and also contributes to, lack of education about OUD treatment in medical and nursing schools, thus preventing ED staff from knowing how to treat OUD and understanding the potential for successful treatment.[87] One ED physician described stigma as an outgrowth of a lack of awareness of effective treatment: "A 'those patients' attitude is likely because they don't have a solution and don't want to feel bad at their job."

Limited capacity and availability of reliable outpatient treatment and needed social supports

> **"There needs to be a space for protecting ED providers because the cases are so complicated, chaotic, and confused. The histories are sometimes incorrect, and patients may have concurrent or undocumented prescriptions."** – ED physician

EDs need a reliable outpatient treatment program where patients can go for follow-up and ongoing treatment. Sites have a range of models for outpatient care; the key is that the referrals be reliable so that ED providers can count on their patients connecting with care. One interviewee explained the key to implementing their program was telling ED providers, "All you have to do is provide buprenorphine; we will protect you and take care of everything after that; you can never make a wrong move." However, high-quality, reliable outpatient treatment is not always available.

All sites described outpatient treatment capacity and availability as a barrier to starting treatment in the ED. One site reported difficulties connecting patients with outpatient care resulted in sending patients to less appropriate levels of care, "There are capacity issues in terms of seeing everyone in the ED and then finding a next day place to send the patients. The result is that the team is not always linking patients to the right level of care." Another site reported a lack of capacity for higher levels of care.

Similarly, another interviewee described the challenges with trying to find outpatient treatment for patients, "ED folks are overwhelmed. They are constantly asked to do research for this or linkages to that. They are saying, 'I am just trying to keep this person alive.' That is where the champion comes in to help push and streamline the process." Many interviewees maintained that finding treatment also involved securing housing and other supports for some patients.

To build this capacity, interviewees set up relationships and educated themselves on resources available in the community to help support patients. Collaboration with outpatient treatment programs is critical;

interviewees reported having good transition processes and good working relationships between ED and outpatient care is important to success.

A lack of information and knowledge about OUD treatment

Lack of training and education among doctors, nurses, and other providers regarding SUDs in general, and OUD in particular, was identified as a barrier by all sites. Several sites reported physicians, nurses, and other staff were initially skeptical of medication treatment for OUD. A hospital administrator explained significant education and culture change were needed. They reported staff were initially skeptical of medication treatment and asked, "Is this a problem that needs this kind of intervention?" At one site that has been offering medication treatment for several years, some providers continue to not provide treatment, but enough have started that someone is generally available 24x7 in the ED. One interviewee reported that providers have different levels of comfort with buprenorphine which led to variability in use. An interviewee at another site said providers did not know much about buprenorphine and were afraid of doing harm, for example, by putting a patient into withdrawal, and this led to hesitancy to offer buprenorphine.

> **"Nurses are very much involved now. There are signs out in the lobby, patients will sometime request help from a triage nurse. Nurses support the program from the very first interaction. 'It really takes a team to treat any disease process.'"** - ED nurse

Three sites described the importance of educating nurses and receiving their support in order to have a successful program. An ED charge nurse reported providing "Extensive on-shift education and outreach with the nurses" on her team. This nurse said it took time to build awareness of the program among nurses and get them on board. An interviewee at another site explained, "Getting nurses to see the importance of the program was critical because nurses spend the most time with patients." Through education and culture change, sites were able to achieve nursing support.

Concern about ED workflow

Interviewees at two case study sites reported hospital administrators and providers expressed concern about how initiating patients on buprenorphine would affect ED flow. Patients have to wait to be in withdrawal before starting buprenorphine, and this can be a barrier if space is limited. However, programs that offer home induction are able to move patients through more quickly. In addition, seeing the impact of starting medication treatment has helped providers be creative and more accepting of sharing space with persons receiving treatment. NY MATTERS reported that when they receive pushback and concern about how this will interfere with ED flow, they respond by "Proving to hospitals that this will not interfere and will actually improve outcomes."

Coordination with outside organizations

All programs depend on relationships with the organizations that will provide ongoing treatment. For hospital-based programs, this involves establishing relationships with community partners. These arrangements are developed through the hard work of ED program staff or hospital leadership. The Anchor ED program is run by a community-based organization and provides on-call recovery support

services to hospitals throughout the state. Some Anchor ED interviewees described the challenges of effectively collaborating between a community-based organization and EDs. Interviewees reported difficulties for recovery specialists with criminal records, for instance, to be approved to work in EDs. Another interviewee reported challenges with "introducing outsiders into an emergency response team"; however, they felt that once the program was known, it was welcomed. Two interviewees explained, "there is not a clear process for hospitals to reach out to the community-based organization with concerns or challenges." The frequent turnover among ED staff means that Anchor ED staff have to "market the program constantly."

Another challenge in working across organizations is data sharing. It is difficult for hospitals to track engagement with community partners because of data and privacy restrictions. Data systems are not linked, and privacy laws prevent seeing where people are engaged in treatment at different times.

Lack of insurance, cumbersome intake policies, and medication costs

Three sites described lack of insurance, insurance company policies, and high cost of medication even with insurance as barriers. One interviewee reported that lack of insurance "stops a lot of people from seeking care. Paying out-of-pocket is not always possible for patients." An interviewee from NY MATTERS explained that out-of-pocket costs for medication can be a barrier to treatment and described their voucher system with Walgreens and Wegmans as a potential solution. Walgreens and Wegmans accept vouchers NY MATTERS gives patients so that patients can receive medication at no cost. The vouchers are then billed back to the NY MATTERS program, which uses state STR/SOR funding to pay for the medications. Prior authorization requirements for buprenorphine were mentioned as a barrier that requires ED staff time to address. Another interviewee described the counseling intake process with required medical necessity and psychosocial screening as onerous and difficult for someone using substances or in withdrawal to complete.

Funding

Three sites described funding as a significant barrier. Specifically, sites that use navigators expressed difficulty paying for these staff when they are not able to bill insurance for navigators' activities. One interviewee explained, "The hardest thing is to pay for the peer recovery coaches/navigators even though they are the lowest-paid people in the hospital because it is not clear how to bill for them. However, they are a key to all of this as they are extremely helpful with reducing stigma for patients." Interviewees reported that financing mechanisms with more flexibility (e.g., bundled payments) to cover the cost of navigators were uncommon.

Buprenorphine X-Waiver requirements

While obtaining an X-Waiver may reduce the training and education barrier, the time commitment and investment required for the X-Waiver was described as a barrier by most sites. One site reported individuals have expressed interest in completing waiver training but have not taken the time to do it.

Facilitators of success

Patient-centered, low-barrier approach promotes uptake of treatment

Several interviews across all case study sites emphasized the importance of taking a patient-centered approach to OUD treatment. Lowering barriers by making treatment available in a respectful, non-stigmatizing way and without delay has been recognized as an important facilitator to initiation and engagement in OUD treatment.[57,85,88] Lowering barriers to care in the ED is accomplished through approaches such as having navigators available in a timely manner to interact with patients, facilitating follow-up with next day appointments, transportation, and warm-handoffs, treating people with SUD with respect, and letting patients make their own decisions. Lowering barriers to care was mentioned by all programs as critical for success in initiating and engaging patients in treatment.

Two sites reported community-based treatment programs' policies, such as requiring that patients on buprenorphine not be using other substances and requiring negative urine drug screening tests, can be barriers to establishing partnerships and maintaining people in treatment. Interviewees described the importance of lowering the bar to start treatment by accepting any patient who wants MOUD. In order to do this, the NY MATTERS program established a "Mission, Vision, and Values Statement" that all community partners are required to sign to be included in their database. This statement requires community providers to meet specific requirements (e.g., be available for next day appointments, not exclude people from treatment if they are using other substances).

The interviewees at all sites addressed the importance of "Going to the bedside and talking to patients and treating patients as humans." Several sites described the importance of "Engaging patients at whatever level they want to engage in" and "Meeting people where they are and getting them into treatment at whatever level the patient wants: medication treatment only is fine, medication and counseling is fine, counseling only is also available." Another interviewee said their program, "takes patients with few rules and restrictions/requirements, and then transfers them to [ongoing outpatient] care only if that is what they want; they can also choose primary care or be kept within the program." A navigator described helping a patient who was using opioids and methamphetamine start buprenorphine. The patient was allowed to start treatment despite other drug use and, after a period of time, asked for help with the methamphetamine use. Interviewees universally endorsed the importance of treating patients with respect and putting them in control of their own treatment.

> **"Really blessed and lucky to have strong provider champion. Clinicians that way back wanted to do more; when suboxone became available they jumped on."** - ED Provider

A passionate champion and expert in OUD treatment

Across the five case studies, all sites had champions who were passionate and motivated to bring ED-based OUD treatment to their site. These individuals are emergency medicine physicians and physician assistants working in the ED. All are knowledgeable about OUD treatment and buprenorphine, have earned the trust and respect of their colleagues and worked to educate others on the team about the importance of buprenorphine. Most of the champions started offering ED-based OUD treatment on their own and grew the program as colleagues saw the possibilities and began to understand how much

it could help patients. Programs were able to expand beyond the ED to other departments when those departments (e.g., OB/GYN, pediatrics) had their own champions. Related to this is the support of the hospital or health system in providing resources and personnel for the program, helping secure funding, and providing the needed autonomy of providers to develop programs and allow them to evolve as needed.

Strong structure to facilitate communication across partners and seamless treatment

ED programs depend on having consistent and reliable access to outpatient care for the patients that they initiate in treatment. Shared understanding and strong communication embedded in the relationships between the hospital and community partners are key to ensuring ED providers will be willing to start medication treatment to facilitate the successful transition of patients and engagement in treatment. Program leadership and stakeholders reported that having direct lines to treatment beds and outpatient appointments in a timely manner furthered patient care and also engendered ED provider cooperation and trust in the program's effectiveness.

Programs effectively established these relationships in different ways. The structure of the DHHA program, the hub-and-spoke model with a management hub, facilitates regular and effective communication across settings. This is also likely made easier by the fact that most of the providers are situated within the DHHA system. The Highland program sends patients to a bridge clinic located just outside the hospital and staffed with some Highland ED physicians. Navigators at Highland work in both the bridge clinic and ED. NY MATTERS emphasized the importance of establishing relationships with organizations rather than individual people so that as people move to different jobs, the relationships are sustained and required outpatient programs to sign on to their "Mission, Vision, Values Statement" to establish a shared understanding between organizations. Other programs also effectively communicated across partners in different ways but sometimes had to rely on individual relationships or one component of the partnership driving communication.

Tracking performance

Systematically tracking treatment process and outcome data is crucial. Case study informants and subject matter experts reported that monitoring ED performance and feeding that information back to clinicians with stories of success is helpful for motivating providers. For example, one expert said they track the number of patients who have buprenorphine administered in the ED and, of these, the number that also received a buprenorphine prescription, to inform efforts to increase this rate. Experts also described having a repetitive process by which they monitor what happens with referrals and let ED physicians and nurses know. Sharing feedback and success stories about people who successfully engage with outpatient treatment with the ED providers can generate excitement and motivation for this work. Without this feedback, ED providers only see the patients who do not do well. One subject matter expert explained that tracking and sharing data with hospital administrators and with the community has facilitated goodwill for the program and can make obtaining necessary funding from the hospital easier.

Discussion

Summary of findings

Offering low-barrier ED-initiated MOUD is one strategy to achieve greater access to OUD care and has emerged as an important entryway for treatment. Systematic evidence for the effectiveness of ED-based efforts to treat OUD is limited but indicates that ED-initiated MOUD is feasible and effective for helping patients engage in outpatient treatment. ED-based efforts take a range of approaches, including ED-initiated MOUD and peer support, and have proliferated over the past several years. Programs continue to evolve.

Most often, programs were started by highly motivated clinicians, championing an approach tailored to the hospital, community resources, and patient mix. Because programs are relatively new and developed individually across the country, there is variation in structure and treatment approaches.

Key components of ED-based OUD treatment efforts include the approach to patient identification, treatment approaches, program structure, relationships with community programs, and financing. Programs vary across these components based on implementation choices, the hospital setting, and available resources. ED-based efforts to treat OUD work well when they have reliable and accessible referral sources and the ability to provide medication treatment. Programs vary in how they identify patients, but overall, lowering barriers to treatment helps patients engage and includes any path to recovery. Some programs use peer navigators who are in recovery, while others use navigators from the community who are not. Insurance reimbursement is available for aspects of ED-based OUD treatment, but most programs also rely on grant funding for services that are generally not covered by insurance (e.g., navigators). Often programs studied originated with grant funding, and some continue to be funded through grants. This is a risk to program sustainability.

Regarding sustainability, all programs identified plan to continue operation. Some are expanding to address other SUDs -- in part because of the perceived effectiveness of the program with OUD and in part because helping more patients may improve program efficiency. Most individuals interviewed noted the role of the programs in changing the culture of the ED and embedding OUD treatment as a core component of the ED.

Barriers to implementing ED-initiated MOUD programs include stigma, funding, lack of knowledge about OUD among ED providers, and lack of reliable, high-quality outpatient treatment for ongoing care. Facilitators for program implementation include having an ED champion, education of ED providers on treating patients with OUD, communication with community providers to establish referral relationships and ensure adequate follow-up, and methods to track performance.

ED-based efforts to address OUD are an important vehicle for reducing stigma around SUDs among providers, patients, and the community.

Limitations

Although a great deal was learned through this research and discussions with program leadership and stakeholders, some limitations must be noted. First, field research was planned just prior to the

emergence of the COVID-19 pandemic and the accompanying burden on hospitals and travel restrictions. All of the interviews for this project thus were conducted virtually. While interviews retained the structure and content originally planned, the investigators were unable to meet in person and tour the facilities to get an on-the-ground experience of the programs and their settings.

Established programs were purposefully selected for case studies. Our findings may not generalize to other hospitals or organizations. Although sites mentioned several barriers to offering OUD treatment in EDs, these sites overcame the barriers for the most part. Additional barriers may exist in EDs that are not yet providing ED-based OUD treatment.

Implications for policy and practice

Because ED OUD programs often emerge from individual team efforts across many institutions, there are variations in implementation. All, however, encounter challenges of funding, resources, and stigma. Much remains to be learned from current efforts to provide guidance to nascent programs and systems interested in developing ED-based OUD interventions. Therefore, opportunities exist to facilitate program development by offering additional venues for learning collaboratives, including sharing of models, challenges, and successes. These venues can also provide a forum for developing and testing guidelines and standardized measures and tools to more effectively measure change and impact. They also can serve as an important vehicle for dissemination. One of the programs studied has already considered starting an academy to train clinicians in developing and implementing ED OUD programs.

Efforts should be made to lower barriers to patient care, making it easy for patients to start treatment, as they are often ready at the time they present to the ED. This includes both funding of services such as expanding capacity for treatment in the community within days of being seen in the ED, availability of TOD and 24-hour follow-up, and ongoing efforts to make the culture of the ED and SUD treatment more broadly welcoming to all patients.

Educational efforts are warranted for providers and the community to improve awareness and knowledge about OUD treatment options and to address stigma. Stigma occurs among providers within and beyond the ED and within the community. Programs and subject matter experts repeatedly report that once the community is aware of the services offered through an OUD program in the ED, they are usually well accepted and supported.

Addressing the challenges of inadequate funding of ED OUD programs presents another opportunity. Programs suggested financing models that include adequate coverage for non-clinical personnel critical to the program, such as recovery navigators or peer navigators, is key to sustainability. The MAT-PDOA and STR/SOR grants, originating with federal funding, were instrumental in numerous cases to the early development of the programs that were studied. Once programs are established, they may become incorporated into hospital budgets. However, many must continue to seek grant funding. Payment models, such as bundled payments, that address gaps in coverage are important to consider.

Because programs use a range of metrics for their own purposes, a systematic approach to identifying and assessing ED-based MOUD efforts is needed, including evaluating the impact of key features. Systematic information on patient and provider perspectives on these programs would help to further

elicit information about improving services. Finally, additional analyses of the cost-effectiveness and sustainability of programs are needed. Many programs report that they have anecdotal information about the effectiveness of programs, but without more rigorous data on effectiveness and cost, it will be difficult to support an argument to maintain efforts, especially when grant funding is no longer available.

More research is also needed on barriers EDs that have not yet started offering MOUD face and how to support and encourage expansion of ED-based MOUD initiation in EDs that are not early adopters. The cases included here were early and enthusiastic adopters of ED-based MOUD initiation, but many EDs do not provide MOUD; studies on whether a top-down or a bottom-up approach to expanding ED-based MOUD are needed. Studies are also needed of which patients to target, how best to identify patients for OUD treatment, and how best to successfully support patients as they engage in outpatient treatment. Research on how many lives are saved and negative health outcomes and ED visits are avoided because of the availability of OUD treatment in the ED is needed and would help as EDs consider expanding access to medication for OUD. However, even without this research, key informants argue EDs have available effective treatments, and if they identify patients with OUD, they must also offer medication treatment.

Finally, most models have expanded beyond the identification and treatment of OUD. Programs have used the lessons from OUD programs to identify and engage patients who have other SUDs, particularly alcohol and stimulant use disorders. Stimulant disorders are seen as a growing national problem, and interviewees feel it is important for their programs to respond. ED-based programs can draw from the experience with OUD, although specific challenges of treatment may differ. Supporting the expansion of ED OUD programs to a wider range of SUDs is a natural step already started by ED programs.

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APPENDICES

Appendix 1: Metrics used to examine the effectiveness of ED-based OUD treatment

Appendix 2: Individual case summaries

Appendix 3. Interview guide

Appendix 1: Metrics used to examine effectiveness of ED-based OUD treatment

Measure	Data Source	Study
ED-based medication initiation studies		
Patient experience measures		
Patient experience	Patient self-report	Snow 2019
Process measures		
Engagement in formal outpatient addiction treatment at various timepoints (e.g., 30 days, 2 month, 6 month, 12 month follow-ups)	Clinician report Clinician report System EMR Outpatient tx pgm	D'Onofrio 2017 D'Onofrio 2015 Dunkley 2019 MA HPC 2018
Initial follow-up with outpatient treatment	System EMR	Dunkley 2019
HIV risk assessment score	Patient self-report	D'Onofrio 2017
Wait time for outpatient treatment	Primary data collection	Kawasaki 2019
Outcome measures		
Number of days of illicit opioid use in the past 7 days	Patient self-report	D'Onofrio 2017
Opioid-negative urine test results (2 months and 6 months)	Primary data collection	D'Onofrio 2017
Mortality	Hospital EMR	MA HPC 2018
Lethal and non-lethal overdose	Hospital EMR	MA HPC 2018
Structural measures		
Number of newly waivered providers	Primary data collection	Kawasaki 2019
Provider knowledge and ability to provide OUD treatment	Primary data collection (survey)	Kawasaki 2019
ED 30 day revisit	Hospital EMR	MA HPC 2018
6 month ED utilization rates	Chart review	Sullivan 2021
Peer Support Studies		
Process measures		
Engaged in medication treatment (initial and 6 month)	Private insurance & Medicaid claims	Watson 2020
Engagement with a formal SUD treatment program within 30 days of the initial ED visit	State SUD administrative data & PDMP Data	Goedel 2020
Initiation of OUD medication	State PDMP Data	Samuels 2018
Outcome measures		
Recurrent ED visit(s) for a suspected opioid overdose over 18 months	Statewide EMR & Denver Health and Hospitals Authority Surveillance Data	Goedel 2020
ED visit for overdose	Statewide EMR	Samuels 2018
1 year mortality	State Vital Records Database National Death Index	Samuels 2018
EMR: Electronic medical record; PDMP: prescription drug monitoring program		

Appendix 2: Individual case summaries

Denver Health and Hospital Authority Case Study Summary

Program snapshot

The Denver Health and Hospitals Authority's (DHHA) medication for OUD program is part of a hub-and-spoke model of treatment. The Center for Addiction Medicine (CAM) at DHHA has its "hub" at the hospital's Outpatient Behavioral Health Department, and the ED is a spoke. OUD treatment efforts in the ED are primarily facilitated by the TOD program. Most partners are located within the DHHA system, and coordination across the ED and other partners is managed by CAM, a feature built into the structure of the model. This high level of integration and coordination allows movement across settings (i.e., from ED induction to next day follow-up treatment) and often works seamlessly. The nascent program took advantage of a MAT-PDOA SAMHSA grant, followed by local and other funding sources, and has grown into a "no wrong door" approach serving over 1,000 patients per year. Activities are expanding beyond opioids to address other substance use, including alcohol use disorder and stimulant use disorder. Data for this case study was collected through interviews with individuals in the following roles:

- ED physicians.
- CAM outpatient behavioral services clinicians and staff.
- TOD program staff.
- Program data manager.

The team also reviewed the following documents shared by DHHA and partners:

- Reporting summary dashboard for the program (Tableau reports).
- Program website materials.
- Annual report.
- Assorted abstracts and manuscripts describing the project and related work associated with the CAM.

Description of the program

History of the program

Between 2014-2017 as the OUD crisis escalated, the DHHA system could not adequately serve persons in need of OUD treatment. Providers knew that if someone could not get into a treatment program easily, their chances of coming back were low, and the dangers of fatal overdose increase over time. Patients had to wait about two weeks to access addiction treatment because there were few clinics. For methadone, patients had to present at 5 AM for intake, which made it challenging to access treatment.

Size and patient population

The program serves mostly residents of the greater Denver area. The patient population is largely White or Hispanic. Most patients have Medicaid. Patients are not turned away due to lack of insurance. Approximately 33-40 percent are chronically homeless, a number that has increased in last two years. Patients are more consistently reporting fentanyl use (estimated at 50 percent). About 30-40 percent of patients have no phone, creating a challenge for follow up.

Approach to patient identification

Demand for OUD treatment is generally patient-driven. The Mayor conducted a large public relations campaign early on, so community awareness of the services is high. Nurses will refer patients if they see an opportunity. If a patient with OUD touches the ED for any reason, the physician's assistant or other staff will do a screening. Those who present to the ED with an overdose are typically not inducted at the time of the ED visit. The triage protocol is based on age and the Clinical Opiate Withdrawal Scale score.

Mode of initiating engagement with patients

Patients come in from many spokes; this is a "no wrong door" approach. Ideally, by the time the patient leaves the ED they have suboxone induction, an appointment for the next day with one of the follow-up treatment locations, and a naloxone kit.

The main places where patients are inducted are the ED and hospital. Due to COVID-19, remote inductions were started. Housing and transportation support services are also offered if needed at the time of induction, to facilitate follow-up engagement in treatment.

Program structure and key staff

Denver Health is a vertically integrated, safety-net system with a Level 1 trauma center, Federally Qualified Health Center (FQHC), family centers, school health centers, corrections, etc. Its MOUD program relies heavily on the professional staff both at the central component, the Behavioral Health department, and each of the spokes, particularly the pediatric and adult EDs. This structure provides a strong incentive to collaborate and coordinate across settings, from the initial entry of patients to immediate and long-term follow-up, and care of medical conditions as well. Community walk-ins are seen five days per week. The OBOT is close by and outpatient treatment programs are also available for daily dosing as needed. Before COVID-19, many patients would come to the outpatient program for daily dosing.

The role of recovery coach or navigator is filled by staff employed by the outpatient behavioral health services (CAM); none are specifically embedded in the ED. In the ED, there is a Screening, Brief Intervention, and Referral to Treatment (SBIRT) program. Nurses and physician assistants do initial alcohol and drug screening, and the two full-time SBIRT staff watch the ED board for alerts to go connect with patients. The SBIRT staff is available day and evenings, but not around the clock, to support the TOD team.

Outpatient treatment capacity has been expanded by moving lots of related treatment activity to the ED. Initial intake takes hours (induction, etc.), and patients have to get enrolled at the same time. The outpatient treatment program works as a bridge clinic for those that do not need a high level of care. For more intensive services, patients are admitted to the hospital.

Relationship with community partners

The MOUD program is becoming well integrated into and beyond the DHHA system. This includes: Psychiatric Emergency Services, methadone treatment, suboxone treatment, hospital medicine, correctional care, family health centers, Denver CARES and other community partners. However, the vast majority of patients stay within the DHHA system, which has a strong and wide infrastructure, including a university hospital. In addition, there is a direct referral protocol for patients with Hepatitis C, and direct referrals from a maternity clinic.

Financing and sustainability

Offering medication treatment for OUD in the ED was enabled initially with federal grant funding. However, it is now included in the DHHA budget and includes regular billing of Medicaid. Leadership feels there is need for a bigger team, though it is acknowledged that as the TOD team grows, there will be a need to increase capacity on the outpatient treatment side as well. Additional grant monies continue to be secured, for example, to assist patients who are uninsured. As an outgrowth of the TOD program, providers now have a pathway for treating patients with methamphetamine symptoms: they are identified in the ED, briefly admitted for symptom treatment and detoxification, and within 48-72 hours they are connected with a treatment provider including contingency management. This reduced ED revisits for these patients. The impetus for the methamphetamine protocol came from the police, who reported that many of their stops are now for methamphetamine related issues. The approach is now being expanded to alcohol use disorder. At present, the program is also considering a more centralized intake procedure for assessing where patients should be inducted, assessing insurance status, and special pathways for adolescents.

CAM is now discussing or engaging in several enhancements:

- Expanding the OUD continuum of care to alcohol use disorder and stimulant use disorder.
- Creating a system-wide registry to expand substance use assessment and then linking patients to the right level of care.
- Starting a Center of Addiction Training Academy and looking for training grants to teach, consult, and share knowledge with folks interested in doing this work.
- Expanding billing and financing system to maximize reimbursement for all SUD services provided.

Seeking additional aid for patients' health-related social needs (e.g., more transitional housing and providing patients with phones to facilitate follow-up).

Metrics and measures of success

The CAM takes the lead in tracking patients and follow-up. Measures tracked include new treatment episodes, unique patients, number of days from ED to treatment follow-up, linkages to outpatient addiction services, retention in treatment at 60, 90, and 365 days.

For example, according to a recent report, of 891 system-wide inductions in 2020, 67.5 percent had follow-up with outpatient addiction services and 53.5 percent of those that were linked were retained in services at 90 days. The TOD program was responsible for 590 inductions, 69 percent of which were linked to outpatient services who then saw a 52 percent retention rate at 90 days.

Facilitators and barriers to offering ED-based OUD treatment

Respondents identified several facilitators and features that contribute to program success:

- The highly coordinated structure of the program has allowed for greatly facilitated movement of patients and information across settings and throughout the continuum of care.
- Having a champion -- in each partner department -- is a major factor in success initially and now. Several ED providers have been "super champions," demonstrating that prior to the program, there was nothing they could do for OUD patients, and now there is something they can do.
- Having SBIRT staff, social workers, or alcohol counselors on site/available. EDs are not designed to be the warmest place these staff can sit with these patients and be with them to listen to their stories.

- Nurse practitioners and physician assistants are available to do the majority of inductions.
- Financing strategy: The program aligned federal funding across different parts of the system. Also, the program pays providers to get the X-Waiver, especially helpful for residents, while educating them more broadly about SUD.
- Relationships were mentioned as a huge part of success. Process work is foundational, but relationships are really important. Need to be able to rely on colleagues. There is real collaboration with partners.
- The program has lowered the bar for treatment entry.

The following were mentioned as barriers:

- Treatment capacity issues: Even in an integrated program such as this, there are limitations in terms of seeing everyone in the ED and then finding a next day place to send the patients.
- ED staff capacity: Busy staff are constantly asked to do additional work to enhance care or linkages. Providers are not always available for bridge prescriptions. This is why next day appointments are required.
- Space capacity: Patients need a private space, sometimes for hours, if they are in withdrawal.
- Social determinants: The need in housing is great, but there are not any big initiatives to help out.
- Lack of skills and training to treat patients with SUD.
- Initially there was pushback from administrators who were worried about ED flow.
- Stigma.
- Data challenges: Referral partners are slow to provide follow-up data. TOD maintains an Access database which is outside of the EHR and is not always readily available to ED staff. HIPAA prevents easily seeing where people are engaged in treatment at times.

Marshall Medical Center Case Study Summary

Snapshot of the program

Marshall Medical Center is a free-standing, non-profit, Level 3 trauma hospital in El Dorado County, a rural area of California with approximately 185,000 residents. Paramedics have up to 45-60 minute transport times due to geographic barriers and rural areas to access.

The effort to initiate Marshall patients with OUD on buprenorphine and connect with care was started in 2017 by a physician assistant who had been working in the ED for more than 15 years. Initially it began with a protocol and an agreement with the community partner to provide anyone who started buprenorphine in the ED an appointment the following morning at 9 AM. The program has grown to include partnerships with other clinical sections of the hospital (e.g., obstetrics) and efforts to address other SUDs including stimulants and alcohol. As the program evolved, it became part of California's Bridge to Treatment program, a statewide collaboration of hospitals implementing ED-based OUD programs.

Information sources

Data for this case study was collected through interviews with individuals in the following roles:

- ED Physician Assistant (founder).
- Hospital administrator.
- ED physician.
- Obstetrics physician.
- ED nurse.
- SUD navigator.
- Community partner.

The team also reviewed the following documents shared by Marshall Medical Center:

- Program data and reports.
- Data from the obstetrics department describing referrals.

Description of the program

History of the program

The program was started by a motivated ED provider without any funding. After the initial start, California Bridge funding was provided for navigator positions and to pay for X-Waiver training. Marshall assessed the highest threats to public health in the community, indices of SUDs and concluded SUDs were a major problem in El Dorado County. They started with a week-long session to identify the best approach and then identified high-risk patients. It was a community and Marshall collaboration.

Marshall was one of the first hospitals to sign up for California's Bridge pilot at the same time the larger hub-and-spoke model was being deployed throughout the state. This resulted in Placerville, California as one of the few places in California where both models were used together (as of April 2019). The founding physician assistant found that treating people "quickly and effectively doubles the likelihood of them being in treatment in 30 days." She followed up with early findings, "For the 49 weeks starting in August 2017, 92 percent of the patients treated at the hospital with Suboxone followed up by seeking care at a spoke, with the nearest one 15 miles away. After a year, 26 of those patients were still in treatment, accounting for a 74 percent success rate." In December 2019, Marshall was named by the

California Health and Human Services Agency to the Patient Safety Honor Roll. In 2018, El Dorado County recorded only seven opioid-related lethal overdoses.

Size

The Marshall Medical Center ED helped to initiate 38 patients on MOUD in the first year with a 74 percent retention rate. The program has seen a steady increase in buprenorphine administration and prescribing. In 2019, 119 patients received treatment with buprenorphine with 97 percent follow-up rate and 82 percent retention rate at one month. In 2020, 174 patients were treated with buprenorphine.

The program currently starts more than ten patients per month on MOUD and links them with community partners.

Approach to patient identification

About half of patients "self-refer" (i.e., come to the ED looking to start OUD treatment with medication [buprenorphine]). The program is advertised widely with signage in the ED, buttons that nurses wear, and on the hospital Facebook page. Case managers working with homeless individuals and local law enforcement are knowledgeable about the program and refer or bring patients to the ED.

Other patients start OUD medication treatment after coming in for an overdose or because they were on medication treatment and missed doses.

Mode of initiating engagement with patients

Patients start buprenorphine in the ED and are referred to one of several community partners for follow-up care the next day. The ED will also provide buprenorphine prescription if needed (e.g., after hours or on a weekend) and in cases where a patient may start treatment at home.

Program structure and key staff

After the initial stage, the founder assembled a team of ED providers of three physician assistants and one nurse practitioner who all completed X-Waiver training to enable buprenorphine prescribing.

Navigators were added after approximately 1.5 years.

Patients start buprenorphine in the ED and are referred to one of several community partners for follow-up care the next day. Referrals are sent to one of four community health centers with 9 AM next day appointments.

The ED is staffed 24/7/365 by providers familiar with treatment of OUD and a navigator is available in the ED and hospital Monday through Friday 10 AM-6 PM but also available by telephone to patients who are considering treatment or not yet established in treatment yet.

Other services provided include test strips for fentanyl and naloxone doses, with the message of, "The therapeutic door that you open with me will never close."

Relationship with community partners

The program works with several community partners. Patients started on MOUD in the ED or hospital are connected with:

- The Marshall CARES Clinic, an outpatient SUD clinic affiliated with the hospital.
- Four community health centers including El Dorado Community Health Center, an FQHC.

- Residential program for pregnant women that supports MOUD.

Other organizations include pharmacies which facilitate medication treatment, law enforcement, case managers for homeless population, tribal heath center, and an information-sharing opioid community coalition.

Financing and sustainability

Initially the program was started without any additional funding. Today, the California Bridge to Treatment grant pays for one navigator and the hub-and-spoke grant pays for two (two in rural areas, one in ED) and also paid for providers to obtain X-Waiver training. Interviewees reported that sustainability will be a challenge when the grant ends.

The Marshall CARES (outpatient SUD treatment) program is funded in part through SOR federal funds directed to OUD treatment. This pays for staff, counselors and medical assistants. Sustaining this outpatient program may be difficult without the SOR funding because billing at current rate does not cover costs. California SOR funding also provides funds to cover medication copayments where needed, which enables patients without insurance to afford medications.

Considering its value, respondents report the program may continue beyond grant funding. One staff member notes, "It will be extremely difficult to extract [the program] from our department." The program would still like to continue services in the ED even if there is not specifically designated grant funding for it. To that end, they are billing for everything they can, but the grants provide an important factor in the level of services right now.

Metrics and measures of success

A review of 2020 activity identified the following metrics:

- 195 patients seen with an OUD Diagnosis.
- 175 were provided with a buprenorphine Rx.
- 112 received referrals to treatment.
- 104 referrals were completed (the follow-up rate for referrals was 93 percent).
- 1 month retention in treatment was 81 percent.
- 74 percent of patients in treatment were new starts.
- More than half of patients seen in 2020 are still in treatment.

Barriers and Facilitators to offering ED-based OUD treatment

Respondents identified several facilitators and features that contribute to program success:

- Champion with passion and drive.
- Patient-centered program.
- Low-barrier program (e.g., eliminating punitive aspects of treatment).
- Pharmacy partner that "provides mediation first and asks questions later".
- Navigators' attention to patients.
- Consistent and welcoming approach to treatment.
- Widely advertising the program through ED signage and buttons.

The following barriers were mentioned:

- Stigma (among both providers, patients, community).

- Lack of knowledge about OUD treatment options and their effectiveness.
- X-Waiver requirements.
- Availability of navigators during off hours.
- Lack of insurance coverage.
- Low reimbursement rates for SUD treatment.
- Copayments for MOUD.
- COVID-19 restrictions.
- Transportation difficulties for patients.

Highland Hospital Case Study Summary

Program Snapshot

Highland Hospital is a 236-bed acute care hospital located in Oakland, California and is the flagship hospital of Alameda Health System. Dr. Andrew Herring, ED physician, started offering buprenorphine treatment in the ED in 2017. Today, the program treats about 600 patients per year and performs 75-100 inductions per month. Highland is a low threshold ED-based program offering 24/7 access to buprenorphine for people in withdrawal or with OUD who are seeking help. This program distinguishes itself in two ways. The program has a universal access policy -- ED patients are not asked if they struggle with substance use, instead, there are publicly placed signs in the ED and patients self-identify when they want help with substance use. The program also proactively reaches out to a local community of providers who are in touch with individuals with OUD, and serves as a 24/7 resource for those centers to refer patients (e.g., detox programs, residential treatment programs, and primary care providers without access to buprenorphine prescribers, or who do not feel comfortable treating people with OUD).

Information sources

Data for this case study was collected through interviews with individuals in the following roles:

- ED physician.
- SUD navigator.
- Hospital social worker.
- Community partner.

The team also reviewed the following documents shared by Highland Hospital:

- Program data and reports.

Description of the program

History of the program

In January 2017, Dr. Herring proposed offering medication treatment for opioid use based on the D'Onofrio study. Prior to this buprenorphine was not readily available in the Highland Hospital ED. Dr. Herring recruited a staff member to help with the program. Initially, the program was staffed with one ED physician and one navigator. The first patients were in February 2017. As the program grew, additional staff and follow-up capacity were added.

The ED at Highland Medical Center provides a low threshold program focused on 24/7 access to buprenorphine for people in withdrawal or with OUD who are seeking help. Follow-up is facilitated through a bridge program affiliated with Highland Hospital and located near the ED. The bridge program employs clinicians and SUD navigators in an on-site clinic. The bridge program takes the initial follow-up appointment so that the ED has a reliable single point of referral. The program takes patients with few rules and restrictions/requirements, and then transfers them to long-term care only if that is what they want; patients can also choose primary care or be kept within the program.

Size

Highland Hospital ED administers buprenorphine in the ED approximately 75-100 times per month, and treats about 600 patients each year making it among the largest programs of its kind in the country.

Approach to patient identification

Highland Hospital uses a universal access policy instead of screening individuals. Patients are not asked in triage if they struggle with substance use. There are publicly placed signs before entry to the ED which state "If you are struggling with pills or heroin, we can start you on buprenorphine today." Signs and posters about the program are also in triage, in the urgent care stalls, in the ED. Staff including greeters and physicians wear pins advertising the program.

Nurses and staff know to page or call the Bridge program if they think someone might need support. Navigators are on-shift from 7:30 AM-7 PM. All providers and nurses have Bridge's information to get help after hours.

Mode of initiating engagement with patients

About 90 percent of inductions occur in a fast-track area that is run by physician assistants and other providers. There is an on-site SUD treatment program (the bridge clinic) funded and organized by the state Medicaid carveout and staffed with ED physicians. The bridge clinic takes care of all follow-up treatment.

Program structure and key staff

Buprenorphine is available 24/7 in the ED and navigators are on site from 7:30 AM-7 PM Monday-Friday. After hours doctors and nurses know what to do. They will start the patient on medication treatment and get a phone number or give instructions for returning to the bridge clinic if patient does not have phone.

Navigation and MOUD services available in all parts of hospital, not just ED; expanded to all SUDs.

ED staff include two physicians, and nurses and a navigator. A hospital social worker also supports patients.

The bridge clinic is an extension of the ED. It is staffed with ED physicians, navigators and medical students in training. The bridge clinic has three providers, a social worker, and navigators.

Relationship with community partners

- The program proactively reaches out to local providers who are in touch with individuals with OUD, and acts as a 24/7 resource to initiate treatment for those centers (e.g., ex-detox programs, residential tx, primary care providers with no access to prescribers, or who do not feel comfortable treating those patients).
- There is a county phone line which immediately directed to Highland clinic.

Financing and sustainability

The Bridge clinic itself is grant-funded. All navigators are grant-funded. California Medicaid will start funding navigators and allow them to bill through the ED, but this is a new policy. California operates a Behavioral Health pilot program, providing $50,000 for each hospital to fund a navigator.

Barriers and Facilitators to offering ED-based OUD treatment

Respondents identified several facilitators and features that contribute to program success:

- Culture change -- offering a patient-centered and respectful approach to treating OUD.
- An ED champion who is passionate, knowledgeable and wants to share.
- Close collaboration between ED an bridge clinic with smooth referral system.
- Navigators really help the system/provider.
- Universal access without screening -- this approach decreases stigmatizing and keeps individuals from divulging information about themselves which can cause harm objectively due to the existing stigma.
- Really meeting people where they are and getting them into the program; at whatever level the patient wants.

The following barriers were mentioned:

- Provider hesitancy to provide medication treatment.
- Restrictive policies about which patients can received medication for OUD.
- Treatment protocols developed in a research setting.
- The historic idea that ED should not be involved in long-term care.
- Funding, especially for navigators.
- System requirements that are burdensome and/or restrictive (e.g., intakes that require 2-3 hours, difficult for someone in withdrawal or under the influence to complete, required to terminate patients who do not maintain engagement for 30 days).
- Insurance barriers and high out-of-pocket costs.

NY MATTERS Case Study Summary

Snapshot of the program

NY MATTERS (Medication Assisted Treatment and Emergency Referrals) (https://mattersnetwork.org/) is a scalable, flexible addiction referral network to facilitate efforts to initiate medication treatment for OUD by connecting patients starting OUD treatment with ongoing outpatient care. The program started in a Buffalo, New York and now supports EDs and other partners across the state. Key aspects of the NY MATTERS program are emergency physician leadership, a range of non-traditional partnerships, a harm reduction approach, and an efficient statewide referral network using an electronic platform that connects patients starting OUD treatment with ongoing community-based treatment services including telemedicine services.

Information sources

Data for this case study was collected through interviews with individuals in the following roles:

- ED physicians.
- Program administrator.
- Community partners including sheriff and pharmacy representatives.
- State health department representative.

The team also reviewed the following documents shared by NY MATTERS and their partners:

- NY MATTERS Mission, Vision, Values Statement.
- NY MATTERS background materials.
- Sample patient discharge instructions.
- PowerPoint presentations about NY MATTERS and community partnerships.
- NY MATTERS website.

Description of the program

History of the program

The NY MATTERS program was started as Buffalo MATTERS in late 2017 by ED physicians, Joshua Lynch and Brian Clemency, who realized patients with OUD were not getting the care they needed. Prior to starting this effort patients with OUD in the Buffalo ED received information about outpatient treatment programs, but did not receive mediation treatment with buprenorphine or specific referrals. To start the program the ED physicians obtained buprenorphine waivers and developed relationships and agreements with three community providers to coordinate next day follow-up care.

The team also developed a relationship with New York State Department of Health. The goal was to create a nimble, scalable effort; to that end NY MATTERS is not tied to a particular ED, clinic, or hospital network. An electronic referral platform was developed and launched in June 2019. Through partnerships with additional hospitals, outpatient programs, and others including criminal justice system, the program has grown and expanded beyond the Buffalo area and is currently working on expanding into additional areas.

Size

The program works with EDs across the state and maintains a database of 250 weekly appointments for initial follow-up across New York State.

Approach to patient identification

The approach to identifying patients varies across sites that use the NY MATTERS program. Each hospital decides their own criteria; NY MATTERS provides flexible guidance. The program also partners with courts, correctional facilities, police departments, emergency medical service providers, and other organizations to help connect people with medication treatment through NY MATTERS.

Mode of initiating engagement with patients

Patients who start medication treatment are connected with ongoing outpatient treatment through an electronic platform available online and often accessed via an iPad. Patients are able to choose outpatient follow-up care at one of the participating partner sites.

All community partners sites participating in NY MATTERS are required to sign on to the Mission, Vision, Values document. This document requires, for example, that community providers accept patients regardless of insurance status, accept patients who have not been prescribed buprenorphine in the past, and not automatically disqualify patients who engage in polysubstance use, offer timely appointments to people referred by the ED, and not exclude patients or discharge patients who are using drugs other than opioids.

Program structure and key staff

The NY MATTERS program is a scalable addiction treatment referral network that operates in collaboration with hospital EDs and other providers or settings who want to start people with OUD on medication treatment and help them connect to care. NY MATTERS is run by a program administrator and two ED physicians; the state hosts the NY MATTERS website and database and provides information technology support. Each participating region has a champion regional coordinator responsible for coordinating outpatient treatment availability. Within each hospital there are different approaches to staffing which may include peer navigators. The program uses telemedicine extensively for referring patients and for providing ongoing care via telemedicine services. All NY MATTERS participating organizations are required to sign on to the NY MATTERS Mission, Vision, Values document which requires, for example, that hospitals prescribe buprenorphine when appropriate based on NY MATTERS guidelines and not automatically disqualify patients if they engage in polysubstance use.

Relationship with community partners

NY MATTERS has relationships with community partners who provide outpatient treatment. NY MATTERS works with the Erie County Department of Health, which employs peer navigators who are responsible for conducting follow-up with patients from the Buffalo ED at the 30-60-90 day marks. NY MATTERS partners with Walgreens to administer vouchers for patients that cover the cost of co-payments for buprenorphine which are paid for through state STR grant funding.

Financing and sustainability

NY MATTERS has funding from New York State Department of Health and the Erie County Health Department available because of grants from SAMHSA and the Centers for Disease Control and Prevention.

Metrics and measures of success

NY MATTERS partners with the state department of health which conducts overdose detection using syndromic surveillance reports. When spikes in overdose are identified the state reaches out to the local health department and hospitals to determine whether the NY MATTERS program or other resources might be able to help.

NY MATTERS tracks who is administered buprenorphine in the ED and who receives a prescription for buprenorphine. The program is developing a system that would allow tracking of initial visits with outpatient care, but this is difficult because of the large number of clinic partnerships. Regional care coordinators are starting to track patient treatment engagement at two, six, and nine months, but resources to do this are limited. NY MATTERS has also collected patient success stories.

Barriers and Facilitators to offering ED-based OUD treatment

Respondents identified several facilitators and features that contribute to program success:

- Lab tests are not required to determine if a patient is a good candidate. Removing those barriers at the provider and clinic level have been essential to maintain access to treatment.
- Patient choice of outpatient clinic location and if they get attached to a peer or not.
- Support from New York State which runs the NY MATTERS website has been very helpful.
- The electronic platform that tracks outpatient appointment availability is flexible. As circumstances at each site change appointment availability in the platform is adjusted. For example, a program may offer two slots every Monday and Wednesday and the program administrator checks in with them if they need to change their availability.
- Community champion.
- Having an ED physician speak to the advantages of the program has helped NY MATTERS expand. ED physicians need to hear from peers to buy-in.
- Willingness to work with community partners outside regular silos; non-traditional relationships (e.g., with health departments, hospitals, prisons and jails) and flexibility are essential.
- NY MATTERS does not charge partners or patients which has facilitated expansion. The scalability of the NY MATTERS program makes it an efficient use of funding which appeals to funders.

The following barriers were mentioned:

- Providers have expressed concern about how to dose buprenorphine. In response NY MATTERS identified a standard dose which was very helpful to providers.
- Stigma among community members.
- Transportation barriers can make it difficult for patients to pick up medication.
- The NY MATTERS' Mission, Vision, Values document was a barrier because each clinic has their own way of doing things. However, it was important to maintain in order to ensure patient access to treatment.
- Hospital and ED concern that offering medication treatment for OUD would interfere with patient flow and take too much time.
- Buprenorphine waiver requirements for emergency medicine staff.
- Cost of medication; partnership with pharmacists in the region and grant funding has been critical to overcome.

- Insurance company preferences for certain buprenorphine formulations put pressure on the program to change medications which is very difficult; however, the issue was eventually resolved through conversations between NY MATTERS, New York State Department of Health, and the insurance companies.
- Challenging to assemble and maintain data from a large number of clinics, makes analysis of impact difficult.

Anchor ED Case Study Summary

Snapshot of the program

Anchor ED is a statewide treatment intervention program for OUD in Rhode Island. The program was created by the Providence Center, the Rhode Island Department of Health, the Rhode Island Department of Behavioral Health, Developmental Disabilities and Hospitals and Anchor Recovery Community Centers. It connects individuals admitted to any Rhode Island hospital ED for an opioid-related overdose, or any substance use related issue (including alcohol), with trained Peer Recovery Coaches.

In response to Rhode Island's high rate of overdose fatalities, Anchor ED was established in 2014 by two motivated co-founders to engage peer support specialists with patients at the point of overdose in the ED. Anchor ED Peer Recovery Coaches are available on call to speak with patients and are trained professionals with lived experience. Anchor ED partners with 11 EDs across the state. The program has expanded to offer recovery support for other SUDs and works primarily with the Anchor Recovery Community Center and additional recovery centers to connect individuals with care close to where they live. Anchor ED has now served as a model for numerous other programs addressing SUD in the ED.

Information sources

Data for this case study was collected through interviews with individuals in the following roles:

- State Health Department executive (co-founder).
- Program liaison.
- Providence Center senior executives.
- Anchor ED manager.
- Operations manager.
- Hospital administrator.
- ED physicians.
- Peer support specialist.

The team also reviewed the following documents shared by Anchor ED:

- Program data and reports.
- Data from the Rhode Island Department of Health describing referrals.
- Public descriptions of the program.

Description of the program

History of the program

The program was started with seed money from the Rhode Island Department of Behavioral Health. The co-founders engaged in meetings and negotiations with hospitals, discussing the devastation caused by the opioid epidemic, devised a plan and started with Rhode Island Hospital with support from a program champion ED physician. The co-founder found that the ED physician's advocacy was key to convincing the ED to allow peer recovery coaches in the hospital.

The Anchor ED model is one of the first of its kind. The program is primarily community-based out of the Providence Center (https://anchorrecovery.providencecenter.org/), unlike many programs that are hospital-based and managed. The Providence Center has provided guidance to many other states and

hospital systems, and has also received international visits from representatives from Vietnam and Canada.

Size and patient population

In Anchor ED's first year, peer recovery coaches had contact with 1,329 patients. In a recent quarter, according to program reports, the Anchor ED responded to 185 total calls and 181 unique individuals. In a recent quarter, 128 individuals seen through Anchor ED were not current already connected with substance use or mental health treatment.

Approach to patient identification

The program has both Providence Center based and ED dedicated peer specialists. Specialists are dispatched through the Anchor ED call-center in response to service requests in the ED. In most cases, clinicians identify patients admitted to the ED for an overdose and those who are good candidates for OUD treatment.

Clinicians ask patients if they want to meet with a peer recovery coach, and if they are interested, Anchor ED is called and a specialist arrives within 30 minutes. Patients can then engage in same-day treatment.

Mode of initiating engagement with patients

The program is not widely advertised in the ED to patients. However, the Anchor ED contact information is posted and visible to ED staff. Each hospital varies with either clinicians or social workers handling coordination with Anchor ED services. Anchor ED stays in touch with patients for ten consecutive days whether or not they initially choose to engage in treatment. As an example, a patient who initially refused treatment contacted the program to start treatment six months later.

Each hospital follows its own set of guidelines about who can induct patients and when to do so. The program offers all paths to recovery that are available, including but not limited to MOUD: it is based on patient preference. Some hospitals will do an immediate induction. Peer specialist assignments factor in proximity to the patient's home. During COVID-19, hospitals used telemedicine to start on medications and then refer patients for continuity.

According to a recent report, of the 1,441 overdose survivors seen by recovery specialists in 2019 1,322 or 91.7 percent, engaged in recovery supports after discharge from the ED.

Program structure and key staff

Peer recovery specialists generally assist in helping to coordinate with the hospital or community partners to a facilitate a patient warm-handoff. They offer a combination of on-site peer recovery support, introduction to the recovery planning process, referrals to substance use and mental health treatment, education and training on naloxone, and more. Specifically, peer recovery specialists link individuals to treatment and recovery resources, provide education on overdose, prevention and on obtaining naloxone, provide additional resources to individuals and family members, and contacting individuals to follow up after they are released from the ED. While recovery specialists are not

embedded in the ED, they are available in rapid time: according to program reports, peer specialists in 2020 took 22 minutes to get to the hospital after receiving a call.

Anchor ED makes consistent efforts to develop relationships with ED staff. The program partners with 11 EDs across the state to provide 24 hour service. Anchor ED calls partner hospitals each day at the beginning of each shift to check in with ED staff to identify new patients. There is also a mobile team known as Anchor MORE (Mobile Outreach Recovery Efforts) which is a "boots on the ground" initiative to connect individuals to treatment and recovery supports.

Relationship with community partners

The program works with several community partners. Patients started on MOUD in the ED or hospital are connected with Anchor Recovery Community Center (primary), or locations to connect individuals with care close to where they live.

Anchor also engages in a number of additional supporting outreach activities, such as continuing education at hospitals about services offered, to get stakeholder feedback, participating in statewide development of protocols for post-overdose care, and is represented on several governor's committees addressing behavioral health and treatment.

Financing and sustainability

Anchor ED operates using SAMHSA funding and state-based funding through the Rhode Island Department of Behavioral Healthcare, Developmental Disabilities and Hospitals (BHDDH). Medicaid expansion has played an important role in sustaining the program through block grant funding.

The program continues expansion of its capacity to offer SUD recovery services beyond OUD. Anchor ED has communicated with the Rhode Island BHDDH to determine its path forward. While its contract has not formally changed, the program does offer recovery support for all SUDs.

Metrics and measures of success

Several measures are reported by Anchor ED on a quarterly basis. This includes patient demographics, response time, types of substances, and program activities. A recent quarterly (October-December 2020) report includes the following:

- The Anchor ED responded to 185 total calls and 181 unique individuals, 128 of them were not currently in treatment.
- 159 Recovery Plans were completed with individuals seen through Anchor ED.
- Each individual seen through Anchor ED was asked if they would like to continue with peer recovery support services after discharge:
    - 175 wanted to continue to with peer recovery supports after discharge.
    - 175 individuals agreed to a referral to treatment services such as detox, intensive outpatient, recovery housing and medication-assisted treatment programs.
- 90 individuals agreed to begin medication-assisted treatment and were connected with potential providers.
- Anchor ED Peer Recovery Specialists provided Naloxone training to 158 individuals seen through the ED.

- **Success Stories from the quarterly report**:
    - An Anchor ED Peer Recovery Specialist was able to secure a bed at Butler Hospital for individual seen in the emergency room. However, they did not have transportation to Butler Hospital and were being discharged from the emergency room. The Peer Recovery Specialist was able to coordinate transportation to Butler with the Anchor MORE team and stayed with the individual in the hospital waiting room until Anchor MORE arrived.
    - Anchor ED recently hired a new Peer Recovery Specialist who received services through Anchor ED in the past. The early connection with a Peer Recovery Specialist at the hospital inspired the individual to pursue a career in the field. The new staff member is scheduled to begin in January 2021.

Barriers and Facilitators to offering ED-based OUD treatment

The following barriers were mentioned:

- Stigma (among both providers, patients, community).
- Lack of knowledge about OUD treatment options and their effectiveness.
- Turnover among ED staff leads to new staff unfamiliarity with peer specialists.
- X-Waiver requirements.
- Lack of insurance coverage for some services, requiring continued reliance on grant funding.
- Low reimbursement rates for SUD treatment.
- COVID-19 restrictions.
- Transportation and housing difficulties for patients.

Respondents identified several facilitators and features that contribute to program success:

- Champion with passion and drive.
- Patient-centered program.
- Low-barrier program.
- Peer recovery specialist initial and continued attention to patients.
- Consistent and welcoming approach.

Appendix 3. Interview guide

Emergency Department Interventions for Opioid Use Disorder

A. About you and your program

A1. What is your role at (insert program)?

- How long have you been at (program)? In this particular role?
- What aspects of this project are you or your (program) responsible for?
- Were you involved with the development of this program? In what capacity were you involved?
- How much of your time is dedicated to this program?

A2. Please tell us more detail about the program history and structure. [probes]

- How long has it been in place?
- What was the original vision and how did it develop?
- What department is it run out of (e.g., ED, behavioral health, etc.)?
- Is there a bridge clinic on site or nearby?
- How was it funded? Ongoing funding?
- What is the size of the program -- how is it staffed, patients evaluated per day/week, patients treated?
- What has changed during the COVID-19 epidemic?

A3. Features of the program. Please describe the following:

- Population served.
- Patient identification in ED.
- Mode of medication initiation.
- Structure and maturity.
- Care coordination model.
- Integration with community treatment programs.
- Other community partners involved.
- Health system structure/unit of organization.
- Motivation for starting the program.
- Financing, sustainability, evaluation.

B. Program Success

- How are you monitoring activity and measuring success?
    - In which ways do you assess effectiveness, and which metrics have been used (e.g., numbers initiated, change in ED visits, engagement in treatment)?
    - Are you using surveys or qualitative interviews by which you assess effectiveness, including for staff and for patients?

    - What have been the outcomes of your assessments?
- What do you feel are the most important features in contributing to the success of ED programs to address OUD? (see above list)
- What are unique aspects of your program that you think particularly important and useful for policymakers to be aware of?

C. Barriers to success

- What are some barriers to success? [probes]
    - Financial/budget/insurance.
    - Time availability.
    - Clinical issues.
    - Recruiting clinicians.
    - Engaging community providers.
    - Stigma.
    - Data.
    - Administrative.
    - Technical.
- How have you addressed any of the barriers that you have mentioned?

D. Sustainability and future outlook

- How do you plan to sustain the program moving forward?
- What resources would be needed to sustain the work?
- What are key considerations or lessons learned for other EDs who are considering establishing an ED OUD program?

E. Additional

- What changes would you make to this program if you were designing it again?
- Is there anything else that you think is relevant to this discussion that you would like to add?