



Published in final edited form as:

J Subst Abuse Treat. 2020 January ; 108: 82–87. doi:10.1016/j.jsat.2019.06.013.

Emergency Department-Based Peer Support for Opioid Use Disorders: Emergent Functions and Forms

Alan B. McGuire, PhD^{a,b}, Kristen Gilmore Powell, PhD, LSW^{c,d,e}, Peter C. Treitler, MSW^{c,e}, Karla D. Wagner, PhD^{f,g}, Krysti P. Smith, MPM^{f,g}, Nina Cooperman, PsyD^{h,i}, Lisa Robinson, MPH^{j,k}, Jessica Carter, BS^{a,b}, Bradley Ray, PhD^{l,m,n}, Dennis P. Watson, PhD^{j,k}

^aRichard L. Roudebush VAMC

^bIUPUI Dept. of Psychology, 1481 W. 10th St. (11H) Rm. C8108, Indianapolis, IN 46202

^cCenter for Prevention Science

^dNortheast & Caribbean Prevention Technology Transfer Center

^eSchool of Social Work, Rutgers University

^fSchool of Community Health Sciences

^gUniversity of Nevada, Reno, 1664 N. Virginia St. MC 0274, Reno, NV 89557

^hDivision of Addiction Psychiatry

ⁱRobert Wood Johnson Medical School, 317 George Street, Suite 105, New Brunswick, NJ 08502

^jCenter for Dissemination and Implementation Science, Department of Medicine

^kCollege of Medicine, University of Illinois at Chicago, 818 S. Wolcott, Chicago, IL 60612

^lCenter for Health and Justice Research

^mPublic Policy Institute

ⁿSchool of Public and Environmental Affairs, Indiana University-Purdue University Indianapolis, 334 N. Senate Ave, Indianapolis, IN 46204

Abstract

Emergency department (ED)-based peer support programs aimed at linking persons with opioid use disorder (OUD) to medication for addiction treatment and other recovery services are a promising approach to addressing the opioid crisis. This brief report draws on experiences from three states' experience with such programs funded by the SAMHSA Opioid State Targeted Repose (STR) grants. Core functions of such programs include: Integration of peer supports in

Corresponding Author: IUPUI Dept. of Psychology, 1481 W. 10th St. (11H) Rm. C8108, Indianapolis, IN 46202, Alan.McGuire@va.gov.

⁷Declaration of Interest

None to declare

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

EDs; Alerting peers of eligible patients and making the patient aware of peer services; and Connecting patients with recovery services. Qualitative data were analyzed using a general inductive approach conducted in 3 steps in order to identify forms utilized to fulfill these functions. Peer integration differed in terms of peer's physical location and who hired and supervised peers. Peers often depend on ED staff to alert them to potential patients while people other than the peers often first introduce potential patients to programming. Programs generally schedule initial appointments for recovery services for patients, but some programs provide a range of other services aimed at supporting participation in recovery services. Future effectiveness evaluations of ED-based peer support programs for OUD should consistently report on forms used to fulfill core functions.

1. Introduction

Authorized as part of the 21st Century Cures Act to combat the opioid epidemic, State Targeted Response (STR) funds in six states are supporting the integration of peer support services within emergency departments (EDs), with peers in this context referring to persons who have lived experience in substance use disorder recovery. The adoption of ED-based peer services is a phenomenon that is happening beyond the context of STR funding and precedes evidence of effectiveness or model clarity (i.e., what works) for such approaches. However, there is rationale for ED-based programs for opioid use disorders (OUD)—e.g., the experience of non-fatal opioid overdose substantially elevates risk for overdose-related death (Stoove, Dietze, & Jolley, 2009) and the ED may represent a rare encounter with the healthcare system for a population who are irregular users of primary care. Moreover, there is rationale for the use of peers to engage people with opioid use disorder (PWOD). Peers more effectively engage persons with severe mental illness (Wright-Berryman, McGuire, & Salyers, 2011) and previous research has linked peer-provided supports with positive outcomes such as reduced hospitalization and criminal recidivism and increased adherence to treatment (White & Kurtz, 2009; Souleymanov et al., 2016; Injecting, Australian, and Illicit Drug User League, 2003).

Given the above rationale, ED-based peer recovery supports for OUD can be considered a promising practice. Nonetheless, existing literature on such programs has focused primarily on feasibility, determinants of implementation, or early-stage service outcomes (Waye et al., 2019; Dwyer et al., 2015; Powell, Treitler, Peterson, Borys, & Hallcom, 2019; Samuels, Baird, Yang, & Mellow 2018a; Samuels, Baird, Yang, & Mellow 2018b; Richardson & Rosenburg, 2019). From what can be gathered from these articles, there is wide variation of scope among programs, ranging from simple naloxone distribution and education to intensive follow-up by peers to connect patients to long-term treatment. If the literature on ED-based peers continues in this manner, conclusions from disparate program models may be inaccurately combined under one heading.

However, while a cautious, linear approach based in a research-to-practice paradigm might seem prudent, it fails to match the realities in the field. The rate of opioid-related overdose deaths in the United States has grown exponentially in recent years (Jala et al., 2018). Accordingly, the Government has spent significant amounts of funding to support

programming (“CDC Prevention for States”, 2017; “HHS, SAMHSA to Maintain Funding”, 2017; “State Targeted Response to the Opioid Crisis Grants”, 2017). Given the urgency of the opioid crisis and availability of funding to support program implementation, it is unrealistic to expect localities will wait for more rigorous research before implementing promising practices. Instead, proactive efforts to describe program models, including key differences amongst programs of this type, may better organize and direct knowledge acquisition and use.

Model clarification is one of many putative factors that might affect dissemination and implementation of promising practices (Damschroder et al., 2009). Differences regarding which specific elements of a model are used across programs can affect the degree to which outcomes can be compared and may be used to explain variation in observed outcomes (Bond et al, 2000). Jolles and colleagues (2019) demonstrated a pioneering way to organize and understand knowledge pertinent to complex interventions that focuses first on clarifying *core functions* of a program and then enumerating specific *forms*- activities or strategies- that can be tailored to local settings. They suggest such an approach is appropriate for a “flexible multicomponent model implemented within heterogeneous and dynamic settings that continuously reshape the intervention before and during implementation” (Jolles, Lengnick-Hall, & Mittman, 2019, Page 2).

Consistent with Jolles and colleagues’ approach (Jolles, Lengnick-Hall, & Mittman, 2019), our team sought to identify core functions of ED-based peer programs for OUD and provide real-life examples of forms taken in settings implementing such programs. To this end, we convened researchers studying STR-funded ED-based peer services for OUD from three states. These teams provide a valuable perspective as they have close access to a wide variety of ED-based peer recovery support programs. Additionally, each team was engaged in some form of data collection regarding the programs in their states and while the lack of uniformity may preclude drawing conclusions about the prevalence or effectiveness of particular model types, these data could be combined to provide a broad picture of the various ways programs are attempting to fulfill their core functions. Analogous to Jolles and colleagues “top-down” approach (Jolles, Lengnick-Hall, & Mittman, 2019), this work developed from conversations among three of the authors (KW, NAC, and DPW), as they engaged in discussions regarding research they were conducting that aimed to leverage opportunities to conduct rigorous research on linkage to evidence-based treatment through opportunities made available by STR funding. These researchers’ projects aimed to assess effectiveness of STR-funded ED-based peer recovery support programs in the states of Nevada, New Jersey, and Indiana, respectively. Early in these discussions, the researchers identified key overlaps and divergences in implementation occurring in each state, which generated an interest in explicitly clarifying the scope of programs subsumed within “ED-based peer recovery support” programs. Accordant with Jolles and colleagues’ “bottom-up” approach (Jolles, Lengnick-Hall, & Mittman, 2019), they then invited additional researchers to the table who were working on the Substance Abuse and Mental Health Services Administration (SAMHSA)-funded evaluations of STR activities within their states. This larger group used program-level data to chart key programmatic elements (forms). These two approaches converged on the following key functions of ED-based peer recovery support programs: 1) Integration of peers into EDs; 2) Identifying and linking PWOUDS

with peer recovery support; and 3) Connecting PWOUDs to recovery services. In the current paper we describe the diversity of forms used by programs within participating states to accomplish these core functions.

2. Methods

Settings

Our data reflect 22 separate programs from three states—New Jersey (n =10 programs), Nevada (n = 2 programs), and Indiana (n = 10 programs)—funded to implement ED-based peer recovery support programs as part of their state’s STR activities. Programs serve rural (n = 4; 18.2%), urban/suburban (n = 11; 50.0%), and a mix of rural and urban/suburban (n = 7; 31.8%) communities. Each program is composed of one or multiple hospital EDs, with the number of EDs that are served by a given program ranging from 1–17 (mean = 2.9; std. dev. = 3.6). Each state differed in the specific mandate guiding program implementation, as described briefly below.

Indiana—The Indiana Recovery Coach and Peer Support Initiative (RCS) was started with STR funding. It was based on an Indianapolis hospital’s quality improvement initiative/pilot that was employing peers to help link overdose patients to treatment, as well as literature describing the early efforts an ED-based peer program in Rhode Island (Waye et al., 2019). Patients were targeted for services if they were admitted to the ED and were identified as having an opioid-related issue by ED staff. To qualify as a peer, persons had to either be a state certified peer recovery coach with: 1) lived experience in substance use disorder recovery or 2) be a family member of someone with a substance use disorder (SUD).

Nevada.—A large component of Nevada’s STR response was to create Integrated Opioid Treatment and Recovery Centers based on the hub and spoke model. In addition to having a brick and mortar property, the recovery centers were required to provide mobile recovery units to conduct services such as outreach and engagement. The goals of the mobile teams included increased rates of identification, initiation, and engagement in treatment, reduction in opioid related overdose deaths, reduced utilization of emergency departments through improved access to continuum care service, and fewer hospital readmissions where readmission is preventable and medically inappropriate. Patients targeted for services included those presenting in the ED with opioid overdose and anyone presenting with a primary or secondary diagnosis of opioid use disorder. All peers have lived experience in recovery from substance use; each recovery center has internal requirements for the peers to receive certification through Foundation for Recovery or the International Certification & Reciprocity Consortium.

New Jersey.—New Jersey’s initiative was first implemented in NJ in 2016 to address the gap between naloxone administration and OUD treatment admissions, after the state found that very few individuals with OUD were admitted to treatment within 30 days of naloxone administration. The OORP existed in 11 NJ counties prior to Opioid-STR but was expanded to the remaining 10 counties using Opioid-STR funding. Patients targeted for services were individuals who overdosed on an opioid, were administered naloxone, and were then

transported to the ED. Peers have at least two years of either 1) lived experience in recovery or 2) experience with a family member or loved one in recovery. The educational requirement is to have a high school diploma or equivalency, with an associate's degree preferred. Peers are required to attend 18 hours (3 days) of ethics training which includes peer role functions, competencies, responsibilities and orientation to other statewide treatment initiatives.

Procedures

Qualitative data were collected by researchers in each state: these data were collected between February 2018 and January 2019. New Jersey data included field notes; 15 semi-structured interviews with patient navigators, program directors, and clinic directors (ED, behavioral health); and focus groups with peer recovery specialists. Data were collected as part of an evaluation of a state-funded program, which was later expanded under STR funding. Indiana data (n = 10 semi-structured interviews with program administrators and champions) were collected as part of STR evaluation activities. Nevadas data (field notes from one year of observations) were collected as part of externally-funded pilot research aligned with STR activities. Data collection activities in each state were led by a doctoral-level researcher with assistance from trained graduate-level research assistants. Each state was in a different phase of implementation at the time data were collected. In New Jersey several programs were in full operation, while in Indiana and Nevada programs were piloting and planning implementation.

Analyses

Data were analyzed using a general inductive approach conducted in 3 steps (Thomas, 2006). The first step in this process involved the summarization of each state's data using a template developed by the First Author (AM) to collect information reflecting program components we had identified as important due to either (a) emphasis placed on them in discussion with STR-funded entities engaged in the evaluation or (b) notable variations in implementation across programs. While we were unaware at the time, the creation of the matrix based on the ongoing conversations outlined above roughly parallels Jolles and colleague's (Jolles, Lengnick-Hall, & Mittman, 2019) "top-down" process in identifying general functions. Second, we established a clear link between the data and objectives by entering the site summary information into a data matrix organized by our guiding questions. Third, we identified and solidified themes/patterns in the data as they pertained to each of the functions, thus identifying multiple forms (similar to Jolles and colleagues' (Jolles, Lengnick-Hall, & Mittman, 2019) "bottom-up" process. This was accomplished through a conference call in which individual group members reflected on the information in the matrix, including critical differences across sites, emerging themes, and outstanding questions. Preliminary results were then triangulated by searching individual states' primary data for support and counter-examples.

3. Results

Below, we report on observed programmatic forms aimed at fulfilling each core function (Table A).

3.1 Core function 1: Integration of peers into the ED

The means by which programs integrated peers into EDs differed along two, inter-related axes: (1) where peers are physically based and (2) where they were administratively housed (i.e., what department and/or organization hires and supervises peers). In terms of where peers are *physically based*, in rare cases they sat in the ED. For instance, in one New Jersey program peers occupied an office in the ED which was already reserved for the behavioral health team; peers were alerted before an overdose patient arrived and have the opportunity to respond immediately [Site 203]. For some programs, peers were located in the target hospital, but not in the ED. In still other programs peers are located off site. For instance, in one New Jersey program [Site 308] peers maintained their offices at a nearby treatment agency where they engaged in other recovery-based activities (e.g., the program's drop-in center) and traveled to the ED when they were notified an eligible patient had been admitted to the ED. Some programs employed peers on a *per diem* basis; therefore, they had no physical office but were called/paged when a person with an opioid overdose was admitted to the ED and responded from wherever they were situated. Finally, one program in Indiana employed a telehealth model, where peers were situated in a centralized hub and communicated with patients via videoconference.

A similarity across all programs is that no peer programs were *administratively housed* within the ED. Instead, peers were either administratively positioned (a) in another department of the target hospital or (b) within a community agency outside of the hospital. When peers were administratively overseen in the hospital, the most typical hospital department providing oversight was behavioral health. When peers were administratively overseen outside the hospital, community entities (e.g., outpatient opioid recovery programs, community mental health centers, or other social service agencies) directly employed or contracted with the peers, and provided their services to the EDs as part of STR-funded activities. For instance, NV had two teams of peers housed in two community-based opioid treatment centers who responded to calls from six hospitals. The arrangements between the peers and the treatment centers also differed – in one case, peers were employed directly by the treatment center. In the other, the peers were employed by a non-profit agency and were contracted by the treatment agency to provide the ED-based services.

3.2 Core function 2: Identifying and linking PWOD with peer recovery support

The means by which this core function was accomplished by programs differed in two main ways: (1) how the peer was notified when a potentially eligible patient is admitted to the ED and (2) who made the patient aware of the availability of peer's services.

Our data reflect a wide range of mechanisms hospitals used to make peers *aware of an eligible patient's ED arrival*. In particular, sites differed as to whether peers are directly privy to admissions or someone else was required to make peers aware of a potential patient. Most programs required a referral, meaning an ED staff member notified the peer of a potential patient. ED staff members notified the peer through a pager, hotline number, global text message system, or direct phone call. In some cases, the notice-giver was a designated staff person occupying a specific ED role (e.g., charge nurse, social worker, or receptionist/clerk), in other cases any ED staff person was able to make the referral. For example, one New

Jersey site alerted peers via a phone call from ED staff or the psychiatric emergency worker [Site 305]. To augment this referral process, hospitals in New Jersey implemented or planned to implement alerts in their electronic health record (EHR) that either automatically contact the peers or prompt the ED staff to make the referral when certain keywords are detected. In other cases, peers employed by the hospital were able to observe admissions directly through the EHR system without an intermediary referral.

As to how the *patient was first introduced to the availability of peer services*, in only a few programs were the peers the first person to introduce their services to patients. For instance, in one Indiana program peers scanned ED admissions for patients who might be eligible for their services [Site 203]. Notably, in this program, even though peers may have become aware of a potential patient before they receive an ED referral, the program still required an official doctor's order for the peer to enroll the patient into the program. In some Indiana EDs with a telehealth program, ED staff wheeled videoconferencing equipment into the patient's room as standard care regardless of patient interest; therefore, the telehealth peer was the first to introduce the program to the patient. However, in most programs, an ED staff member talked to the patient about peer services prior to contacting the peer. These programs often did not refer patients who declined and/or who the ED staff did not think were appropriate. Some programs have implemented standardized scripts for ED staff in order to provide consistent and accurate program information.

3.3 Core function 3: Connecting PWOUDs to MAT and other recovery services

A key goal of the STR-funded peer services in all three states was engaging patients with medication for addiction treatment (MAT) or other recovery services, per patient choice. Programs varied in terms of strategies for recovery service engagement, including (1) the approaches taken to make the initial referral and (2) strategies to ensure the patient's engagement in treatment after the initial referral.

The initial MAT referral was accomplished in different ways. In several programs, the peer or another member of the peer program was tasked with scheduling an initial appointment with a MAT provider. This referral was facilitated in some cases; for instance, some peers maintained a special relationship with MAT providers and/or were employed by the same program as the MAT provider. One MAT provider facilitated referrals through walk-in hours for program participants. Four programs in New Jersey [Site 301, Site 302, Site 306, Site 308] and one in Indiana [Site 205] had access to ED-initiated buprenorphine (*i.e.*, a limited amount of buprenorphine prescribed before the patient leaves the hospital that is intended to last the patient until they can meet with another MAT provider). Some programs were planning to or had discussed providing a time-limited buprenorphine prescription (to provide relief from detoxification until an intake appointment with a MAT provider could be scheduled) before the patient left the ED, whether provided directly within the ED or by a different department within the hospital.

Programs also employed a variety of strategies to *ensure the patient engaged in treatment* after the referral was made, though all of them included some form of short-term communication to identify and reduce barriers to MAT engagement. Such services may be provided by the peer or by another member of the program team. For some teams, peers or

an associated patient navigator conducted assertive outreach, allowing the programs to maintain contact with patients for a period of time to ensure continued engagement with services. One program even met patients in the community, including in patients' homes, in order to maintain this contact and engagement. A large portion of programs also offered, or at least supported, transportation to appointments, using a program-owned vehicle, transportation vouchers, or a dedicated ride (via shuttle, ride-share, cab, etc.) to the initial MAT appointment. Other programs were going further by providing rides to any needed appointment or from the ED to transitional housing. Some programs provided case management and connected patients with a wide range of services to support their recovery, including housing, employment, insurance assistance, and mental healthcare.

4. Discussion

This report identifies three core functions of ED-based peer support programs for OUD and enumerates observed forms extant programs have utilized to fulfill these functions. Future research should report how target programs fulfill these core functions and the presence or absence of the particular forms enumerated here. Such work will facilitate empirically establishing the impact of these particular elements on implementation and effectiveness. Prior work in numerous areas has demonstrated the link between implementation fidelity and patient outcomes (Stewart, Karlin, & Murphy, 2015; Ehde, Dilworth, & Turner, 2014; Schoenwald, Chapman, Sheidow, & Carter, 2009). The operationalization of critical elements is a first step in model definition, which in turn supports fidelity monitoring (Bond et al., 2000). Importantly, researchers should take care when comparing outcomes from trials using certain elements (e.g., direct peer referrals, embedded peers) to other trials using ED-based peer programs without these elements.

Anecdotal evidence accrued by our team point toward factors that may influence the selection of particular programmatic forms and how this may impact workflow and effectiveness. The volume of patients presenting to an ED with OUD seemed to impact the programmatic form. For hospitals where the volume of overdose patients was high, locating peers in the ED made sense as a way to ensure response times were quick and few calls were missed. In some higher-volume hospitals, peers employed by outside behavioral health or substance abuse treatment organizations were given space within the EDs and/or were provided volunteer or other hospital credentials to facilitate access. However, for hospitals where the volume of overdose patients was low but the number of hospitals needing coverage and/or the physical distance between them was high, locating peers outside the hospital in a centralized location (and bolstering their coverage with telehealth) was a more viable solution. Hospital volume was also relevant in terms of administrative oversight. In hospitals where the frequency of overdose was relatively low, it was cost prohibitive for hospitals to employ peers directly and peers were more frequently employed by outside agencies.

The integration of peers into the ED subsequently affected the burden on ED staff in linking patients with peers. Many programs require active measures by ED staff to connect potential patients with peer recovery support providers. This may hamper enrollment (and, indeed, several programs reported revising initial models due to low enrollment). Prior research

highlights the importance a new program's fit within a setting's existing workflow and processes (Damschroder et al., 2009; May & Finch, 2009). Programs that require multiple, active steps provide additional opportunities for referrals to be missed or lost and for longer delays between the patient presenting and being seen by a peer. Additional duties may be particularly unfeasible for busy ED staff. Finally, placing others between peers and patients obviates a central justification for utilizing peers—peers' potential advantage in engaging patients with opioid use disorder. Peers have been theorized to be uniquely positioned to engage hard-to-reach populations based on their shared experience; to this end, prior research in intensive case management demonstrated patient engagement as the key advantage of the inclusion of peer providers on case management teams (Wright-Berryman, McGuire, & Salyers, 2011).

The effectiveness of ED-based peer support programs for OUD may ultimately be limited by the availability of effective OUD treatments, particularly MAT. Indeed, in our sample, MAT availability varied. In one case, there were no MAT providers in the county. Additionally, while naltrexone was more readily available, methadone and buprenorphine were often unavailable locally. This is consistent with prior research documenting limited availability of MAT (Jones, Campopiano, Baldwin, & McCance-Katz 2015; Sharma et al., 2017), and is problematic considering prior research has shown most patients are not interested in naltrexone as an option (likely due to the need to go through detox before it is administered) (Lee et al., 2018; Di Paola et al., 2014). Finally, despite promising research (D'Onofrio et al., 2015), very few EDs served by our sample programs provided ED-initiated buprenorphine.

The current study is a preliminary report and its limitations should be recognized. First, data regarding these elements were not systematically collected for each program and varied within programs; therefore, no conclusions should be drawn regarding the overall prevalence of each program element. Moreover, although we chose to focus on three core functions and their associated forms, experience with these models in future settings may provide other important insights. While the programs examined present a broad swath of extant programs, they are not all of the ED-based programs functioning in the targeted states, let alone the nation.

Future research should remain open to describing and examining additional elements of ED-based peer support programs for opioid overdose survivors. As noted above, future work aimed at assessing ED-based peer program's effectiveness should systematically track program elements so the association between element presence and outcomes can be examined. Such research will necessitate clear and consistent measurement of the implementation of such elements. Moreover, research should examine peer-level interactions in order to understand behaviors associated with better patient outcomes and define peer practice and competence. Finally, research should focus on the impact inner and outer context have on implementation of similar programs (Damschroder et al., 2009; Watson et al., 2018).

Acknowledgements

In New Jersey, data collection activities were part of an evaluation funded by the New Jersey Division of Mental Health and Addiction Services.

In Indiana, initial discussions leading to this project were supported by the National Institute on Drug Abuse (R21DA045850), and data collection and analysis activities were supported by the Indiana Family and Social Services Administration, Division of Mental Health and Addiction and the U.S. Substance Abuse and Mental Health Services Administration (TI080233).

This research was supported by a grant from the Laura and John Arnold Foundation.

The content of this article is solely the responsibility of the authors and does not represent the official views of any of the funding agencies listed above.

5.: Appendix

Table A:

Core Functions and Forms of ED-Based Peer Support Programs for OUD

Core Function 1: Integration of Peers into the ED	
Where are peers physically based?	<i>Programs integrate peers into the ED. This integration may be facilitated by: physical integration- where peers office/desk space resides and administrative integration- what department/organization hires and supervises the peer.</i>
<input type="checkbox"/> ED	
<input type="checkbox"/> Target Hospital (Not ED)	
<input type="checkbox"/> Community Agency	
<input type="checkbox"/> No Office	
<input type="checkbox"/> Telehealth	
Where are peers administratively housed?	
<input type="checkbox"/> Within another department of the hospital	
<input type="checkbox"/> Within a community agency outside of the hospital	
Core Function 2: Identifying and Linking PWOUDs with Peer Recovery Support	
How is the peer notified when a potentially eligible patient is admitted to the ED?	<i>Program identifies PWOUDs presenting to the ED, alerts the peer (if necessary), and makes the patient aware of peer support services.</i>
<input type="checkbox"/> Through a referral	
<input type="checkbox"/> Designated staff person notifies peer	
<input type="checkbox"/> Any ED staff person notifies peer	
<input type="checkbox"/> EHR alerts peer	
<input type="checkbox"/> ED staff are alerted by EHR to refer peer	
<input type="checkbox"/> Admissions are directly observed through EHR	
Who makes the patient aware of the availability of peer services?	
<input type="checkbox"/> Peer	
<input type="checkbox"/> Other (e.g., ED staff member)	
Core Function 3: Connecting PWOUDs to MAT and other Recovery Services	
What approaches are taken to make the initial referral?	<i>The program connects the PWOUD to OUD treatment of his choice and provides services aimed at reducing barriers to the PWOUD engaging in treatment.</i>
<input type="checkbox"/> Scheduling an initial appointment with a MAT provider	

Core Function 1: Integration of Peers into the ED	
<input type="checkbox"/> Peers have relationship with MAT provider	
<input type="checkbox"/> Peers are employed by same program as MAT provider	
<input type="checkbox"/> MAT provider has walk in hours	
<input type="checkbox"/> ED-initiated buprenorphine	
<i>What strategies are used to ensure patient engagement in treatment after the initial referral?</i>	
<input type="checkbox"/> Short-term communication to identify and reduce barriers to MAT engagement	
<input type="checkbox"/> Assertive outreach	
<input type="checkbox"/> Meet with patients in the community	
<input type="checkbox"/> Offer/support transportation to appointments	

8. References

- Bond GR, Evans L, Salyers MP, Williams J, & Kim HW (2000). Measurement of fidelity in psychiatric rehabilitation. *Mental health services research*, 2(2), 75–87. [PubMed: 11256719]
- Centers for Disease Control and Prevention, Prevention for States. (2017, October 23). Retrieved from https://www.cdc.gov/drugoverdose/states/state_prevention.html
- Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, & Lowery JC (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation science*, 4(1), 50. [PubMed: 19664226]
- Di Paola A, Lincoln T, Skiest DJ, Desabrais M, Altice FL, & Springer SA (2014). Design and methods of a double blind randomized placebo-controlled trial of extended-release naltrexone for HIV-infected, opioid dependent prisoners and jail detainees who are transitioning to the community. *Contemporary clinical trials*, 39(2), 256–268. [PubMed: 25240704]
- D’Onofrio G, O’Connor PG, Pantalon MV, Chawarski MC, Busch SH, Owens PH, ... & Fiellin DA (2015). Emergency department–initiated buprenorphine/naloxone treatment for opioid dependence: a randomized clinical trial. *Jama*, 313(16), 1636–1644. [PubMed: 25919527]
- Dwyer K, Walley AY, Langlois BK, Mitchell PM, Nelson KP, Cromwell J, & Bernstein E. (2015). Opioid education and nasal naloxone rescue kits in the emergency department. *Western Journal of Emergency Medicine*, 16(3), 381. [PubMed: 25987910]
- Ehde DM, Dillworth TM, & Turner JA (2014). Cognitive-behavioral therapy for individuals with chronic pain: efficacy, innovations, and directions for research. *American Psychologist*, 69(2), 153. [PubMed: 24547801]
- HHS, SAMHSA to Maintain Funding. (2017, October 30). Retrieved from <https://www.samhsa.gov/newsroom/press-announcements/201710300530>
- Injecting, Australian, and Illicit Drug User League. (2003). *National Statement on Ethical Issues for Research Involving Injecting. Illicit Drug Users*, Canberra, 6.
- Jalal H, Buchanich JM, Roberts MS, Balmert LC, Zhang K, & Burke DS (2018). Changing dynamics of the drug overdose epidemic in the United States from 1979 through 2016. *Science*, 361(6408).
- Jolles MP, Lengnick-Hall R, & Mittman BS (2019). Core Functions and Forms of Complex Health Interventions: a Patient-Centered Medical Home Illustration. *Journal of General Internal Medicine*, 1–7.

- Jones CM, Campopiano M, Baldwin G, & McCance-Katz E. (2015). National and state treatment need and capacity for opioid agonist medication-assisted treatment. *American journal of public health*, 105(8), e55–e63.
- Lee JD, Nunes EV, Novo P, Bachrach K, Bailey GL, Bhatt S, et al. (2018). Comparative effectiveness of extended-release naltrexone versus buprenorphine-naloxone for opioid relapse prevention (X:BOT): a multicentre, open-label, randomised controlled trial. *The Lancet*. 2018;391:309–18.
- May C, & Finch T. (2009). Implementing, Embedding, and Integrating Practices: An Outline of Normalization Process Theory. *Sociology*, 43(3), 535–554. 10.1177/0038038509103208
- Powell KG, Treitler P, Peterson NA, Borys S, & Hallcom D. (2019). Promoting opioid overdose prevention and recovery: An exploratory study of an innovative intervention model to address opioid abuse. *International Journal of Drug Policy*, 64, 21–29. [PubMed: 30551002]
- Richardson J, & Rosenberg L. (2019). Peer support workers in emergency departments: engaging individuals surviving opioid overdoses – qualitative assessment [White Paper].
- Samuels EA, Baird J, Yang ES, & Mello MJ (2018a). Adoption and utilization of an emergency department naloxone distribution and peer recovery coach consultation program. *Academic Emergency Medicine*, 00, 1–14.
- Samuels EA, Bernstein SL, Marshall BD, Krieger M, Baird J, & Mello MJ (2018b). Peer navigation and take-home naloxone for opioid overdose emergency department patients: Preliminary patient outcomes. *Journal of substance abuse treatment*, 94, 29–34. [PubMed: 30243414]
- Schoenwald SK, Chapman JE, Sheidow AJ, & Carter RE (2009). Long-term youth criminal outcomes in MST transport: The impact of therapist adherence and organizational climate and structure. *Journal of Clinical Child & Adolescent Psychology*, 38(1), 91–105. [PubMed: 19130360]
- Sharma A, Kelly SM, Mitchell SG, Gryczynski J, O’Grady KE, & Schwartz RP (2017). Update on barriers to pharmacotherapy for opioid use disorders. *Current psychiatry reports*, 19(6), 35. [PubMed: 28526967]
- Souleymanov R, Kuzmanovi D, Marshall Z, Scheim AI, Mikiki M, Worthington C, & Millson MP (2016). The ethics of community-based research with people who use drugs: results of a scoping review. *BMC medical ethics*, 17(1), 25. [PubMed: 27129927]
- State Targeted Response to the Opioid Crisis Grants. (2017, May 30). Retrieved from <https://www.samhsa.gov/grants/grant-announcements/ti-17-014>
- Stewart MO, Karlin BE, Murphy JL, Raffa SD, Miller SA, McKellar J, & Kerns RD (2015). National dissemination of cognitive-behavioral therapy for chronic pain in veterans. *The Clinical journal of pain*, 31(8), 722–729. [PubMed: 25171637]
- Stirman SW, Marques L, Creed TA, Gutner CA, DeRubeis R, Barnett PG, ... & Jo B. (2018). Leveraging routine clinical materials and mobile technology to assess CBT fidelity: the Innovative Methods to Assess Psychotherapy Practices (imAPP) study. *Implementation Science*, 13(1), 69. [PubMed: 29789017]
- Stoove MA, Dietze PM, & Jolley D. (2009). Overdose deaths following previous non-fatal heroin overdose: record linkage of ambulance attendance and death registry data. *Drug and Alcohol Review*, 28(4), 347–352. [PubMed: 19594787]
- Thomas DR (2006). A general inductive approach for analyzing qualitative evaluation data. *American journal of evaluation*, 27(2), 237–246.
- Watson DP, Adams EL, Shue S, Coates H, McGuire A, Chesher J, ... & Omenka OI (2018). Defining the external implementation context: an integrative systematic literature review. *BMC health services research*, 18(1), 209. [PubMed: 29580251]
- Waye KM, Goyer J, Dettor D, Mahoney L, Samuels EA, Yedinak JL, & Marshall BD (2019). Implementing peer recovery services for overdose prevention in Rhode Island: An examination of two outreach-based approaches. *Addictive behaviors*, 89, 85–91. [PubMed: 30278306]
- White W, & Kurtz E. (2009). Great Lakes Addiction Technology Transfer Center and Philadelphia Department of Behavioral Health and Mental Retardation Services.
- Wright-Berryman JL, McGuire AB, & Salyers MP (2011). A review of consumer-provided services on assertive community treatment and intensive case management teams: implications for future research and practice. *Journal of the American Psychiatric Nurses Association*, 17(1), 37–44. [PubMed: 21659293]

Highlights

- Emergency department (ED)-based peer support programs for opioid use disorder (OUD) are a rapidly spreading promising practice
- Core functions of these programs include integrating peer support within the ED, identifying persons with OUD in the ED and linking them with peer support services, and facilitating their linkage with medication for addiction treatment and other recovery services
- The forms, or specific ways in which these functions are fulfilled, vary substantially across the three targeted states
- Future work should consistently report on how programs meet core functions, evaluate program effectiveness, and explore the link between particular forms and outcomes