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# Implementing hospital-based peer recovery support services for substance use disorder

Elliott J. Liebling , Jessica Joyce S. Perez, Michael M. Litterer, and Connie Greene

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## ABSTRACT

**Background:** The rise in drug overdose deaths in the United States necessitates novel approaches to reduce harms. In response, peer recovery support services for substance use disorder have been implemented in clinical and community settings in several states.

**Objectives:** This descriptive analysis aimed to describe the implementation of hospital-based peer recovery support services for substance use disorder.

**Methods:** We describe the implementation of the Peer Recovery Program, which delivers recovery support services 24 hours a day, seven days a week, for patients with substance use disorder in emergency departments and inpatient settings across 20 hospitals. We report program, patient, and referral characteristics and program process measures.

**Results:** From 2016 to 2019, Recovery Specialists received referrals during 30,263 patient visits. In 2019, 65.4% ( $n = 7,564$ ) of patients were male. Across three subsamples of referrals, patient acceptance of continued recovery support services ranged from 74.8% to 83.0%. At affiliated hospitals in 2019, the median response time from referral to Recovery Specialist arrival at patient bedside was eight minutes (interquartile range = 4–16), and the median duration of initial bedside consultation was 35 minutes (interquartile range = 25–45). In 2019, Recovery Specialists and Patient Navigators attempted 113,442 follow-up contacts, and patients accepted 4,696 referrals provided by Patient Navigators to substance use disorder treatment and other medical, social, and recovery services and supports.

**Conclusions:** This study describes peer recovery support services for substance use disorder delivered in emergency departments and inpatient settings. Evidence of improved patient outcomes is needed prior to widespread adoption.

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## KEYWORDS

Peer recovery support services; substance use disorder; addiction; drug overdose; opioids; hospital

## Background

The rise in drug overdose fatalities in the United States is often attributed to concurrent growth in opioid-related overdose fatalities, the rate of which increased by over 300% from 1999 to 2016 (1,2). Fatal overdoses including stimulants, sedatives, and/or cocaine also increased over this period, with the rate of fatal overdoses involving stimulants increasing by a factor of ten (2). In 2018 alone, there were 67,367 drug overdose deaths; these included 46,802 deaths involving opioids, the majority of which involved synthetic opioids such as fentanyl (3).

Peer recovery support services are characterized by the provision of nonclinical support, coaching, mentoring, and/or education by individuals with lived experience of recovery (4,5). Peer recovery support services are applicable to a wide range of conditions and settings; the feasibility and effectiveness of these services for substance use disorder (SUD) are most clearly demonstrated in outpatient

addiction treatment and community settings (6,7). In these settings, peer recovery support services have been associated with reduced substance use, injection and sexual transmission risk behaviors, and craving, as well as improved treatment engagement and self-efficacy (7).

Post-overdose interventions in the emergency department (ED) are critical for mitigating the high risk of short-term all-cause mortality for patients who visit the ED for opioid and other drug overdose (8–11). Peer recovery support programs for patients who visit the ED for opioid overdose or other substance use-related reasons are funded by the Substance Abuse and Mental Health Services Administration (SAMHSA) in several states, including Indiana, Nevada, New Jersey, and Rhode Island (12–15). In Rhode Island, the vast majority of ED providers surveyed utilized peer recovery support consultations for patients at risk of opioid overdose, and consultation utilization was consistent over

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time (16). However, there is a lack of literature on similar programs for patients with any SUD in the ED and inpatient setting (12,17–19). Therefore, this study aimed to describe the implementation of a novel program delivering hospital-based peer recovery support services for SUD and report program, patient, and referral characteristics and program process measures.

## Methods

### Setting

The Institute for Prevention and Recovery is part of RWJBarnabas Health, New Jersey's largest integrated health care delivery system (20,21). The Institute for Prevention and Recovery has received state funding since January 2016 to administer the Opioid Overdose Recovery Program (OORP), which is partially funded through a State Targeted Response to the Opioid Crisis grant awarded by SAMHSA and implemented by the New Jersey Division of Mental Health and Addiction Services (22,23).

OORP is designed to dispatch on-call Recovery Specialists and Patient Navigators to EDs to engage with patients reversed from an opioid overdose with the opioid antagonist naloxone at the hospital or prior to arrival (22). Beginning in January 2018, the Institute for Prevention and Recovery received additional state funding to expand OORP. The Institute for Prevention and Recovery's implementation of OORP was renamed the Peer Recovery Program (PRP) and expanded beyond serving only ED patients who received naloxone at the hospital or prior to arrival to reverse an opioid overdose to also serve patients with SUD in EDs of all participating hospitals and inpatient units of RWJBarnabas Health hospitals. This expansion aimed to provide a consistent standard of care irrespective of drug(s) used or reason(s) for visit and support patients with lower severity SUD (i.e., prior to overdose). In May 2018, PRP Recovery Specialists transitioned from per diem to full-time employment and from on-call to on-site shifts.

PRP serves 20 hospitals in seven New Jersey counties accounting for approximately half of the state's population, while other health systems and community agencies serve the remaining 14 counties through OORP (24). Of the 20 hospitals served by PRP, 13 are affiliated with RWJBarnabas Health. PRP staff are members of RWJBarnabas Health hospital care teams. Effective July 2019, OORP providers can be reimbursed for peer support services by NJ FamilyCare, New Jersey's Medicaid program (25).

### Program design

The Institute for Prevention and Recovery employs approximately 70 Recovery Specialists who work three 12.5-hour shifts per week. Recovery Specialists staff each RWJBarnabas Health hospital and two regional offices 24 hours a day, seven days a week, and travel from the nearest regional office to respond to referrals from non-RWJBarnabas Health hospitals.

Recovery Specialists provide bedside consultation and continued peer support for a minimum of eight weeks post-consultation, attempting to contact patients three times in the first week (including once within 24 hours), twice in the second week, and once per week thereafter, totaling 11 attempted contacts in person or over the phone. Recovery Specialists also call patients three, six, nine, and 12 months post-consultation to assess treatment utilization and recovery. Patients may refuse, discontinue, or resume bedside consultation or peer support at any time. To encourage phone calls from patients, especially those without a consistent phone number or who have refused or discontinued services, Recovery Specialists provide silicone wristbands embossed with their name and phone number. During bedside consultation and follow-up contacts, Recovery Specialists provide nonclinical recovery support, including modeling positive behaviors for patients and families, empowering patients to make self-directed decisions about their recovery, assisting patients in developing coping skills and a social support system, and teaching patients and families harm reduction strategies such as how to use naloxone (26). To maintain a nonclinical role, Recovery Specialists may offer support regarding SUD treatment but are prohibited from providing referrals to treatment.

Recovery Specialists aim to assist patients in improving their health and wellness, living a self-directed life, and initiating and maintaining recovery (26). Social comparison and social learning theories posit that peer modeling can create positive behavior change and underpin the design of the role (27). The New Jersey Division of Mental Health and Addiction Services requires that Recovery Specialists have a minimum of two years of lived experience in guiding principles of recovery, either through personal experience or experience with a loved one, and a high school diploma or equivalent (12,26). The Institute for Prevention and Recovery additionally requires that Recovery Specialists be in recovery from SUD for at least four years, receive certification by the Addiction Professionals Certification Board of New Jersey as a Certified Peer Recovery Specialist and NAADAC, the Association for Addiction Professionals, as a National Certified Peer Recovery Support Specialist, and receive clinical and nonclinical supervision (25).

The Institute for Prevention and Recovery also employs 12 Patient Navigators. During normal business hours, 11 centrally located Patient Navigators utilize a phased workflow to serve patients over the phone. On weekdays from 4 p.m. to 12 a.m., one Patient Navigator completes tasks from each phase remotely.

Recovery Specialists offer referrals to Patient Navigator services, which patients may accept at any point. Upon acceptance, Recovery Specialists contact Phase I Patient Navigators to conduct biopsychosocial patient screenings and educate patients on funding sources, services and supports in the community, and differences among levels of care. In consultation with patients, families, and other members of the care team, Phase I Patient Navigators may recommend withdrawal management and/or SUD treatment. Then, Phase II Patient Navigators provide patients with a tailored selection of at least three providers, facilitate linkage, and assist patients in acquiring needed documentation. Phase II Patient Navigators also provide referrals and facilitate linkage to other medical, social, and recovery services and supports. In hospital settings, Patient Navigators advocate for patients and provide input on clinical decision-making, including regarding the provision of medications for opioid use disorder such as buprenorphine and methadone.

Patient Navigators aim to use their clinical expertise and knowledge of local resources to conduct case management and assist patients in developing a person-centered recovery plan and strengthening their capacity to initiate and maintain recovery (26). The inclusion of Patient Navigators is based on the demonstrated impact of case management for individuals with SUD on enhancing linkage to services, a primary goal of OORP and PRP (26,28). The New Jersey Division of Mental Health and Addiction Services requires that Patient Navigators have three years of experience working with individuals with SUD and mental health disorders, previous addictions coursework, and a bachelor's degree; Patient Navigators are not required to be in recovery from SUD (26).

Referrals for recovery support services from RWJBarnabas Health hospitals, triggered automatically based on certain criteria or ordered by hospital staff in the electronic health record, are transmitted to Recovery Specialists' cell phones using a Health Insurance Portability and Accountability Act-compliant secure messaging application. Automatic referrals can be generated once per patient visit by an ED visit or inpatient admission by a current or former PRP patient, a positive response to one or more SUD-related screening questions, administration of particular screening tools, or naloxone or buprenorphine being ordered or prescribed for certain patients. Staff at non-RWJBarnabas Health hospitals request Recovery Specialists via a 24-hour hotline.

## Measures

PRP staff document patient information and all contacts using structured forms in an electronic health record. Data collection using paper forms was phased out between June and September 2018. The information analyzed in this study includes whether patients received naloxone at the hospital or prior to arrival to reverse an opioid overdose as a proxy for whether patients experienced an opioid overdose at the hospital or prior to arrival; patients' age, gender, race/ethnicity, current insurance status, and current housing status; drugs patients reported using; whether referrals were placed in a hospital affiliated with RWJBarnabas Health and in an ED or inpatient unit; the response time from referral to Recovery Specialist arrival at patient bedside; the duration of initial bedside consultation by Recovery Specialists for consultations accepted by patients; and a recovery support services measure. The recovery support services measure indicates whether patients accepted bedside consultation and, if so, whether patients accepted recovery support only, accepted Patient Navigator services (which requires acceptance of recovery support), or refused continued services. We included follow-up conducted by PRP staff and referrals provided by Patient Navigators as additional process measures.

## Analysis

First, we used descriptive statistics to summarize characteristics of unique patient visits with PRP referrals from the inception of the program in January 2016 through December 2019. Next, we used descriptive statistics to summarize characteristics of two subsamples of unique patients served in 2019: those who experienced an opioid overdose at the hospital or prior to arrival and those who did not. Patients were categorized as experiencing an opioid overdose if they had at least one qualifying referral in 2019. We also calculated the mean number of referrals in 2019 per patient for these subsamples. Third, we used Pearson's chi-squared test or Fisher's exact test (when one or more cells included fewer than five observations) for categorical variables and ANOVA for continuous variables to assess the significance of differences in each variable between the subsamples at  $p < .05$ . We then constructed equivalent subsamples from the second half of 2019 and reported the drugs most commonly used by patients in each subsample.

Fifth, we used descriptive statistics to summarize characteristics and the recovery support services measure of three subsamples of referrals: those from 2016 to 2017, those from 2018 to 2019 for patients who experienced an opioid overdose at the hospital or prior to arrival, and those from 2018 to 2019 for patients who

did not experience an opioid overdose at the hospital or prior to arrival. Referrals from 2016 to 2017 were placed prior to the expansion of OORP and thus intended only for patients who experienced an opioid overdose at the hospital or prior to arrival. We then used Pearson's chi-squared test to assess the significance of differences in each variable and a collapsed recovery support services measure (accepted or refused continued services) across the three subsamples at  $p < .05$ . Using two subsamples of referrals from April through December 2019, those for patients who experienced an opioid overdose at the hospital or prior to arrival and those for patients who did not, we included whether the referral was placed in an ED or inpatient unit. We also stratified referrals from 2019 by hospital affiliation and calculated the median response time from referral to Recovery Specialist arrival at patient bedside and the median duration of initial bedside consultation by Recovery Specialists for consultations accepted by patients. Finally, we used descriptive statistics to summarize follow-up conducted by PRP staff and referrals provided by Patient Navigators in 2019. We conducted analyses using Microsoft Excel and Stata SE 15.1. The Monmouth Medical Center Institutional Review Board determined the study protocol was exempt from review.

## Results

From the inception of PRP in January 2016 through December 2019, PRP Recovery Specialists received referrals during 30,263 patient visits. There were 720 referrals in 2016, 1,898 referrals in 2017, 9,060 referrals in 2018, and 18,585 referrals in 2019. Across the 18,585 referrals in 2019, 11,560 (62.2%) unique patients were referred. Approximately one in six patients ( $n = 1,893$ , 16.4%) referred in 2019 experienced an opioid overdose at the hospital or prior to arrival; the remainder ( $n = 9,667$ , 83.6%) did not. **Table 1** summarizes characteristics of these two subsamples; all variables differed significantly between them. The mean age of patients who experienced an opioid overdose at the hospital or prior to arrival was 41.4 years (standard deviation = 13.26), compared to 44.0 years (standard deviation = 14.15) among patients who did not. Additionally, 69.2% ( $n = 1,310$ ) of patients who experienced an opioid overdose at the hospital or prior to arrival were male, compared to 64.7% ( $n = 6,254$ ) of patients who did not. In both samples, the majority of patients were non-Hispanic white and approximately one in seven were Hispanic/Latino. However, 27.8% ( $n = 526$ ) of patients who experienced an opioid overdose at the hospital or prior to arrival were non-Hispanic Black, compared to 23.5% ( $n = 2,274$ ) of patients who did not.

**Table 1.** Characteristics of Peer Recovery Program patients, 2019.

	Patients who experienced an opioid overdose 1,893 (16.4%)	Patients who did not experience an opioid overdose 9,667 (83.6%)	$\chi^2$ (df)	$p$
	n (%)	n (%)		
Mean age (standard deviation)	41.4 (13.26)	44.0 (14.15)	53.20 (11,558) <sup>a</sup>	< 0.001
Gender			(2) <sup>b</sup>	0.006
Male	1,310 (69.2%)	6,254 (64.7%)		
Female	560 (29.6%)	3,180 (32.9%)		
Other	1 (0.1%)	9 (0.1%)		
Race/ethnicity			24.16 (3)	< 0.001
White, non-Hispanic	1,009 (53.3%)	5,302 (54.8%)		
Black, non-Hispanic	526 (27.8%)	2,274 (23.5%)		
Hispanic/Latino	266 (14.1%)	1,390 (14.4%)		
Other, non-Hispanic	28 (1.5%)	279 (2.9%)		
Insurance status			74.14 (4)	< 0.001
Private	216 (11.4%)	1,715 (17.7%)		
Medicaid	834 (44.1%)	3,832 (39.6%)		
Medicare	125 (6.6%)	1,031 (10.7%)		
Other	10 (0.5%)	87 (0.9%)		
Uninsured	356 (18.8%)	1,692 (17.5%)		
Housing status			68.33 (4)	< 0.001
Own or rent	488 (25.8%)	3,468 (35.9%)		
Someone else's home	707 (37.3%)	3,072 (31.8%)		
Shelter	18 (1.0%)	54 (0.6%)		
Homeless	192 (10.1%)	1,080 (11.2%)		
Other	18 (1.0%)	60 (0.6%)		
Mean referrals (standard deviation)	1.8 (1.68)	1.6 (1.53)	20.65 (11,559) <sup>a</sup>	< 0.001

Not all columns sum to 100% due to missing data and/or rounding.

Significance tested using Pearson's chi-squared test unless otherwise noted.

<sup>a</sup>Significance tested using ANOVA.

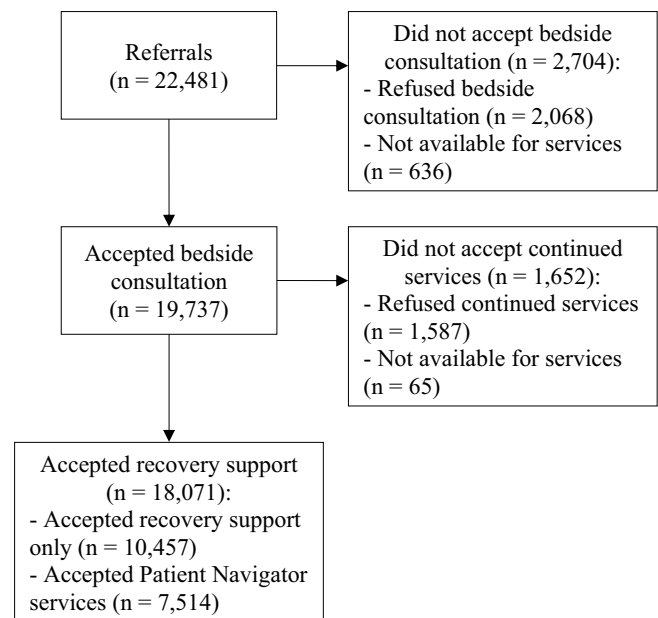
<sup>b</sup>Significance tested using Fisher's exact test.

Among patients who experienced an opioid overdose at the hospital or prior to arrival, 11.4% ( $n = 216$ ) were covered by private insurance, compared to 17.7% ( $n = 1,715$ ) of patients who did not. In both samples, approximately one in ten patients reported currently being homeless. Living in someone else's home was reported by 37.3% ( $n = 707$ ) of patients who experienced an opioid overdose at the hospital or prior to arrival and 31.8% ( $n = 3,072$ ) of patients who did not. The mean number of referrals in 2019 was 1.8 (standard deviation = 1.68) per patient who experienced an opioid overdose at the hospital or prior to arrival and 1.6 (standard deviation = 1.53) per patient who did not.

Among 1,078 unique patients who experienced an opioid overdose at the hospital or prior to arrival and were referred in the second half of 2019, the most commonly reported drugs used were heroin ( $n = 726$ , 67.3%), alcohol ( $n = 259$ , 24.0%), other opioids ( $n = 227$ , 21.1%), and cocaine ( $n = 165$ , 15.3%). Among 6,000 unique patients who did not experience an opioid overdose at the hospital or prior to arrival and were referred in the second half of 2019, the most commonly reported drugs used were alcohol ( $n = 3,453$ , 57.6%), heroin ( $n = 1,455$ , 24.3%), cocaine ( $n = 832$ , 13.9%), and other opioids ( $n = 607$ , 10.1%).

Among the 30,263 referrals from 2016 to 2019, 8.7% ( $n = 2,618$ ) were from 2016 to 2017, 17.1% ( $n = 5,164$ ) were from 2018 to 2019 for patients who experienced an opioid overdose at the hospital or prior to arrival, and nearly three-quarters ( $n = 22,481$ , 74.3%) were from 2018 to 2019 for patients who did not experience an opioid overdose at the hospital or prior to arrival. Nearly all ( $n = 2,600$ , 99.3%) referrals from 2016 to 2017 were for patients who experienced an opioid overdose at the hospital or prior to arrival.

Figure 1 illustrates the recovery support services measure for referrals from 2018 to 2019 for patients who did not experience an opioid overdose at the hospital or prior to arrival. Of the 22,481 referrals, the majority ( $n = 19,737$ ) resulted in patients accepting bedside consultation. For 2,704 referrals, patients did not accept bedside consultation because they refused or were not available for services (e.g., left against medical advice, were unresponsive, were deceased). Of the 19,737 referrals in which patients accepted bedside consultation, the majority ( $n = 18,071$ ) resulted in patients accepting continued recovery support services, which consists of accepting only recovery support from a Recovery Specialist or accepting Patient Navigator services (which requires also accepting recovery support). For 1,652 referrals, patients did not accept continued



**Figure 1.** Recovery support services measure flow diagram for Peer Recovery Program referrals for patients who did not experience an opioid overdose, 2018 to 2019.

Information is partially or completely missing for 54 referrals.

recovery support services due to refusing or becoming unavailable for services.

Table 2 summarizes characteristics and the recovery support services measure of the three subsamples of PRP referrals. We observed significant differences across the three subsamples in the recovery support services measure and the collapsed (accepted or refused continued services) measure ( $p < .001$ ). Excluding referrals for patients who were not available for services, 74.8% ( $n = 1,682$ ) of referrals from 2016 to 2017 resulted in patients accepting continued recovery support services, compared to 78.4% ( $n = 3,620$ ) of referrals from 2018 to 2019 for patients who experienced an opioid overdose at the hospital or prior to arrival and 83.0% ( $n = 18,772$ ) of referrals from 2018 to 2019 for patients who did not experience an opioid overdose at the hospital or prior to arrival.

From April through December 2019, 93.7% ( $n = 1,491$ ) of referrals for patients who experienced an opioid overdose at the hospital or prior to arrival were placed in an ED, compared to 71.5% of referrals for patients who did not; the remainder were placed in an inpatient unit. For referrals in 2019 from hospitals affiliated with RWJBarnabas Health, the median response time from referral to Recovery Specialist arrival at patient bedside was eight minutes (interquartile range = 4–16), and the median duration of initial bedside consultation by Recovery Specialists for consultations accepted by patients was 35 minutes (interquartile range = 25–45). For referrals in

**Table 2.** Characteristics and recovery support services measure of Peer Recovery Program referrals, 2016 to 2019.

	2016 to 2017		2018 to 2019		$\chi^2$ (df)	p
	Referrals <sup>a</sup> 2,618 (8.7%)	Referrals for patients who experi- enced an opioid overdose 5,164 (17.1%)	Referrals for patients who did not experi- ence an opioid overdose 22,481 (74.3%)			
	n (%)	n (%)	n (%)			
Hospital affiliation					889.36 (2)	< 0.001
Affiliated	2,083 (79.6%)	4,015 (77.7%)	20,504 (91.2%)			
Not affiliated	535 (20.4%)	1,138 (22.0%)	1,974 (8.8%)			
Recovery support services measure					637.80 (6)	< 0.001
Refused bedside consultation	111 (4.9%)	591 (12.8%)	2,068 (9.5%)			
Refused continued services	464 (20.5%)	385 (8.3%)	1,587 (7.3%)			
Accepted recovery support only	908 (40.2%)	2,379 (51.5%)	10,457 (48.0%)			
Accepted Patient Navigator services	774 (34.3%)	1,241 (26.9%)	7,614 (35.0%)			
Not available for services <sup>b</sup>	360 (-)	545 (-)	701 (-)			

Not all columns sum to 100% due to missing data and/or rounding.

Significance tested using Pearson's chi-squared test.

<sup>a</sup>Of referrals from 2016 to 2017, 99.3% (n = 2,600) were for patients who experienced an opioid overdose.

<sup>b</sup>Not available for services includes patients who could not accept or refuse services for reasons like leaving against medical advice, being unresponsive, and being deceased. These patients were omitted in calculating percentages for and testing significance of the recovery support services measure.

2019 from hospitals not affiliated with RWJBarnabas Health, the median response time from referral to Recovery Specialist arrival at patient bedside was 30 minutes (interquartile range = 21–41), and the median duration of initial bedside consultation by Recovery Specialists for consultations accepted by patients was 50 minutes (interquartile range = 38–60).

In 2019, Recovery Specialists and Patient Navigators attempted 113,442 follow-up contacts. Recovery Specialists conducted nearly three-quarters (n = 84,637, 74.6%) of all follow-up attempts, and approximately one in eight (n = 10,544, 12.5%) of these follow-up attempts were in-person contacts; the remainder were attempted over the phone. In 2019, patients accepted 4,696 referrals provided by Patient Navigators, including to self-help groups (n = 1,120, 23.9%), withdrawal management (n = 1,106, 23.6%), outpatient (n = 722, 15.4%) and residential (n = 652, 13.9%) SUD treatment, opioid treatment programs and office-based opioid treatment (n = 397, 8.5%), and transportation services (n = 236, 5.0%).

## Discussion

This study describes the implementation of PRP, which staffs hospitals with full-time Recovery Specialists and provides peer recovery support services in the ED and inpatient setting for patients with SUD.

To our knowledge, this is the first study of hospital-based peer recovery support to describe a program implemented in both the ED and inpatient setting (17–19). PRP is also novel in serving patients with any SUD; similar programs primarily serve individuals with opioid and/or alcohol use disorders (12,15,19). After expanding PRP in January 2018 to include patients with any SUD in EDs and

inpatient units, the percentage of referrals resulting in patients accepting continued recovery support services was higher for patients who experienced an opioid overdose at the hospital or prior to arrival and patients who did not, compared to referrals from 2016 to 2017. This finding suggests that expanding services beyond ED patients who experienced an opioid overdose at the hospital or prior to arrival did not negatively impact program implementation. The significant difference in acceptance of services across subsamples may be due to improved program implementation over time or varying effectiveness of the program and staff in serving different populations. To reduce harms, recovery support services should be inclusive, person-centered, and tailored to patients at high risk for repeat overdose and other marginalized groups (16,17,29).

While many existing peer recovery support models utilize Recovery Specialists who are either on-call or located within the hospital during normal business hours, few, if any, employ full-time Recovery Specialists to staff hospitals 24 hours a day, seven days a week (12,15,17–19). This study demonstrates that a full-time, hospital-based approach can promote short response times from referral to Recovery Specialist arrival at bedside; this is particularly important for patients who may be discharged before a Recovery Specialist arrives. This analysis also found the median duration of initial bedside consultation was shorter at hospitals staffed by Recovery Specialists than at hospitals served on an on-call basis. Without the barrier of traveling to and from hospitals during shifts, hospital-based Recovery Specialists can more easily leave and return to patients' bedsides according to patient and care team needs, which may reduce interruptions of patient flow. Improved integration into care teams may also yield more referrals and more effective continuity of care.

In July 2019, New Jersey joined 37 other states covering peer support for Medicaid beneficiaries with an SUD (25,30). This coverage may reduce the reliance of providers on grants and improve the sustainability of programs like OORP and PRP. To inform the design of peer recovery support models and reimbursement strategies, future studies should aim to measure the effect PRP and similar programs have on specific outcome measures, including engagement in care, initiation of and retention on medications for opioid use disorder, maintained recovery, relevant social determinants of health, length of stay, ED revisits, hospital readmissions, and mortality (29). In Massachusetts, inpatients with SUD who were seen by an addiction consult team including Recovery Specialists located in outpatient settings had lower 30-day readmission rates, reduced addiction severity, and a greater increase in the number of days of abstinence, though the relative contribution of Recovery Specialists is unknown (31,32). In Rhode Island, a review of peer recovery support consultations for ED patients at risk of opioid overdose demonstrated non-significant trends suggesting a shorter time to the initiation of medications for opioid use disorder, decreased ED revisits for opioid overdose, and decreased mortality; a randomized controlled trial with primary outcomes of engagement in SUD treatment and ED revisits for opioid overdose is also planned (33,34).

There are several limitations to our study. First, PRP is implemented in acute care settings in primarily urban and suburban areas. These results may not be generalizable to other regions or health care settings. Second, certain patient characteristics, such as current insurance and housing status, were self-reported and collected through sometimes time-limited conversations between patients and PRP staff, resulting in missing data and the possibility of misreporting due to social desirability bias. Similarly, changes to data collection tools resulted in periods of missing referral location and drug use data, limited the referrals that could be deduplicated at the patient level, and impeded the identification of successful and unsuccessful follow-up contacts. Third, we chose to present some data on unique hospital visits since patients may visit hospitals multiple times with varied needs and interact with different PRP staff. However, this may result in overcounting certain characteristics common among patients referred multiple times. Fourth, we used whether patients received naloxone at the hospital or prior to arrival to reverse an opioid overdose as a proxy for whether patients experienced an opioid overdose at the hospital or prior to arrival. There is the potential for misclassification bias since patients may experience an opioid overdose at the hospital or prior to arrival without receiving naloxone.

## Conclusions

This study describes the implementation of hospital-based peer recovery support services for SUD. Across all three subsamples, most referrals resulted in patient acceptance of PRP's hospital-based and continued peer recovery support, suggesting these types of interventions can be delivered in the ED and inpatient setting for patients with SUD. Evidence of improved patient outcomes is needed prior to widespread adoption.

## Abbreviations

ED	Emergency department
OORP	Opioid Overdose Recovery Program
PRP	Peer Recovery Program
SAMHSA	Substance Abuse and Mental Health Services Administration
SUD	Substance use disorder

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## Disclosure of interest

The authors report no conflict of interest.

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