Association Between Emergency Department Operational Metrics and Substance Use Disorder Treatment Interest in Two Rhode Island Hospitals

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ABSTRACT

OBJECTIVE: This study examined if emergency department (ED) operational metrics, such as wait time or length of stay, are associated with interest in substance use disorder (SUD) treatment referral among patients at high risk of opioid overdose.

METHODS: In this observational study, 648 ED patients at high risk of opioid overdose completed a baseline questionnaire. Operational metrics were summarized using electronic health record data. The association between operational metrics and treatment interest was estimated with multivariable logistic regression.

RESULTS: Longer time to room (adjusted odds ratio [AOR]=1.12, 95% confidence interval [CI]=1.01-1.25) and length of stay (AOR=1.02, 95% CI=1.00-1.05) were associated with treatment referral interest. Time to provider and number of treating providers showed no significant association.

CONCLUSION: Longer rooming wait times and longer ED visits were associated with increased SUD treatment referral interest. This suggests patients who wait for longer periods may be motivated for treatment and warrant further resource investment.

KEYWORDS: opioid use disorder, medications for opioid use disorder, emergency department, wait time

INTRODUCTION

The overdose crisis is a serious public health problem in the United States, with over 80,000 individuals losing their lives due to opioid overdose in 2021.[1] In Rhode Island alone, 331 individuals died of an opioid overdose in 2021.[2] Effective treatments for opioid use disorder (OUD), specifically methadone and buprenorphine, have been associated with lower incidence of overdose and mortality.[3-5] However, disparities in access to treatment remain, and treatment engagement among people at high risk of opioid overdose remains low.[6-13] Indeed, more than three in every five individuals who lost their life due to a drug overdose had a missed opportunity for linkage to care, further emphasizing the stark need for increased connection with treatment.[14] The emergency department (ED) has emerged as a strategic site for intervention, as ED visits for opioid overdoses have increased in recent years, and the ED may be the only healthcare point of contact for many individuals with OUD.[15-19]

Initiation and linkage to substance use disorder (SUD) treatment from the ED has been shown to improve outcomes and reduce mortality, yet uptake is low.[20-23] There is an urgent need to better understand and improve treatment readiness and engagement among patients in ED-based settings. Patients often describe treatment readiness as a complex decision, impacted by multiple factors, both internal and external.[24] Negative patient experiences in the ED, such as stigmatization, may impact their decision to start treatment.[24-31] For instance, patients with OUD have reported increased feelings of stigma when they are more visible within the ED, such as in hallways and waiting areas.[25,26] Similarly, some patients have reported that they believe stigmatization led to delayed medical care.[31] It has thus been previously hypothesized that prolonged ED wait times may contribute to decreased uptake of SUD treatment.[21]

ED operational metrics, such as how long a patient waits to be roomed or seen, number of staff providing care, and overall visit length, offer a way to quantitatively analyze the circumstances that shape a patient's experience in the ED. To our knowledge, no prior studies have assessed whether ED operational metrics are associated with a patient's interest and engagement in SUD treatment. These metrics, if associated with treatment interest and engagement, could inform strategies for improving linkage to treatment in the ED.

The objective of this study was to determine if ED operational metrics are associated with interest in a treatment referral. The secondary outcome was to determine if ED metrics are associated with subsequent treatment engagement within 30 days of an ED visit. We hypothesized that longer wait times and interactions with more staff would be associated with lower treatment interest and engagement due to greater opportunity for exposure to stigmatization in the ED.

METHODS

This was a cross-sectional secondary analysis and retrospective cohort study of data collected for The Navigator Trial, a randomized controlled trial (RCT) assessing the

effectiveness of ED-based behavioral interventions provided by a certified peer recovery specialist versus a licensed clinical social worker. The RCT protocol has previously been published (NCT03684681).[32] The trial protocol was approved by the study sites' Institutional Review Boards. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[33]

Recruitment occurred 24 hours per day, 7 days per week from two Rhode Island hospital EDs from November 2018 to May 2021. Eligible patients were being treated for an opioid overdose, a complication of OUD (eg, infectious complication), or were identified as having an opioid overdose within the prior 12 months via self-report or chart review. In total, 648 ED patients were enrolled. Participants completed a baseline study survey and provided consent for review of their electronic health records (EHRs) and linkage to statewide administrative data on SUD treatment. Participant demographics and health history were obtained from the baseline survey, which by protocol was administered once patients had been roomed. Operational metrics for the baseline ED visit, including the independent variables time to room (defined as time to a definitive care space including physical rooms as well as designated hallway beds), time to physician or advanced practice practitioner (APP), number of treating physicians/APPs, and length of stay in the ED, were manually extracted from EHRs using timestamps. Metrics were chosen based on availability in the EHR as well as literature suggesting a relationship with stigmatization.[25-26,35] For participants who were ultimately admitted from the ED, number of ED providers was not available in the EHR, and length of stay was not calculated.

The primary outcome was interest in a referral to SUD treatment, as reported on the baseline survey. The secondary outcome was SUD treatment engagement within 30 days of the baseline ED visit, obtained via linkage to the statewide databases, specifically the Behavioral Health Online Database and the Prescription Drug Monitoring Program. The Behavioral Health Online Database included information regarding admission and discharge from SUD treatment programs at behavioral health care organizations licensed by the Rhode Island Department of Behavioral Healthcare, Developmental Disabilities and Hospitals, such as residential treatment centers and methadone clinics, among others. The Prescription Drug Monitoring Program database included information regarding buprenorphine prescriptions distributed to Rhode Island (RI) residents by RI and most out-of-state retail pharmacies. The secondary outcome, treatment engagement, was defined as any new treatment encounter at a SUD treatment program licensed by the state or any fulfillment of a buprenorphine prescription within 30 days of the baseline ED visit. Importantly, a new encounter at a SUD treatment program included transition to a different SUD treatment program, enrollment in a new SUD treatment, continuation of treatment with a new provider, and/or enrollment in an additional type of SUD treatment. Continuation of the same SUD treatment with the same provider was not defined as a new treatment episode.[32,34]

Data analysis was conducted in STATA/SE (version 15.1, StataCorp), and the *a priori* level of significance was 0.05. Characteristics of study participants were summarized using descriptive statistics. Multivariable logistic regression was used to estimate the association between ED operational metrics and treatment interest and engagement, adjusting for potential confounders, including race, ethnicity, gender identity, insurance, housing stability, suicidality, depressive symptoms as measured by the Center Epidemiologic Studies Depression (CES-D) scale, current treatment status, ED volume and left without being seen rate the day of the participant's index visit, and admission status, among others (**Table 3**). Missing data categories were created for depressive symptoms and suicidality to preserve sample size; a complete-case analysis was completed for sensitivity. A sensitivity analysis with removal of 44 participants who were administered the baseline survey before being roomed was conducted to account for variation in timing of survey completion. An additional sensitivity analysis with removal of patients already in some form of SUD treatment at the time of the index ED visit was conducted.

RESULTS

Overall, 648 ED patients at high risk of opioid overdose were enrolled in the study. The mean age was 36.9 years (standard deviation=10.8), 439 participants identified as male (67.7%), and 444 were white (69.2%) (**Table 1**). A large proportion of participants had health insurance (90.6%), were unemployed (69.4%), and were unstably housed within the past six months (43.7%). Depressive symptoms were highly prevalent; among participants who completed the Center for Epidemiologic Studies Depression scale (CES-D), 405 (84%) had scores that were considered at risk for clinical depression. Additionally, 109 participants (16.8%) endorsed suicidality to ED staff. At baseline, 178 participants (27.5%) were currently engaged in SUD treatment, and most participants (497 of 630 [78.9%]) had previous experience with SUD treatment.

Most participants arrived at the ED by ambulance (403 [62.2%]) and were triaged to an emergency severity index (ESI), a measure of patient acuity, of level 2 (274 [42.3%]) or level 3 (331 [51.1%]) (**Table 1**). 145 participants were ultimately admitted to the hospital from the emergency department. The median time to room and median time to physician/APP was 0.9 hours (interquartile range [IQR]=0.0-3.0) and 0.9 hours (IQR=0.0-2.7), respectively (**Table 2**). The median number of physicians/APPs who participated in each patient's ED care was 5 (IQR=1-9) and the median overall ED length of stay was 7.4 hours (IQR=0.5-14.3), excluding participants admitted to the hospital (**Table 2**).

Table 1. Baseline characteristics among participants in the Navigator Trial

Characteristics	Participants, N=648 (%)
Age, mean (SD)	36.9 (10.8)
Race	
American Indian or Alaska Native	17 (2.6%)
Asian	3 (0.5%)
Black, African, Haitian, or Cape Verdean	39 (6.0%)
Mixed, bi-racial, or multi-racial	61 (9.5%)
Native Hawaiian or Other Pacific Islander	3 (0.5%)
White	444 (69.2%)
Other[a]	62 (9.6%)
Did not know or refused to answer	13 (2.0%)
Hispanic ethnicity	107 (16.5%)
Gender identity	
Female	202 (31.2%)
Male	439 (67.7%)
Transgender	1 (0.2%)
Insurance coverage	576 (90.6%)
Employed[b]	181 (27.9%)
Unstably housed	
Never	192 (29.6%)
Not in past 6 months	158 (24.4%)
In past 6 months	283 (43.7%)
Addiction Treatment[c]	
Never	133 (20.5%)
Not currently	314 (48.5%)
Currently	178 (27.5%)
Suicidal ideation[d]	109 (16.8%)
Emergency severity index (ESI)	
1 (highest acuity)	3 (0.5%)
2	274 (42.3%)
3	331 (51.1%)
4	35 (5.4%)
5 (lowest acuity)	1 (0.2%)
Mode of arrival	
Ambulance	403 (62.2%)
Personal vehicle	85 (13.1%)
Bus/foot	127 (19.6%)
Other (taxi, police, unknown)	33 (5.1%)

a Race and ethnicity were self-reported, and no specification of "other" was given
b Employment included full-time and part-time work
c Addiction treatment includes medication treatment, detoxification, self-help groups (such as AA), outpatient program, day or residential treatment programs, or other
d As recorded in the EHR by ED staff; was not recorded for 145 participants

Table 2. ED operational metrics among participants in the Navigator Trial

Characteristics	Participants N=648 n (% of total participants unless otherwise noted)
Left without being seen[a]	8 (1.2%)
Never roomed[b]	22 (3.4%)
Length of stay in ED in hours, median (IQR)[c]	7.4 (0.5–14.3)
Time to room in hours, median (IQR)	0.9 (0.0–3.0)
Time to physician/advanced practice provider (APP) in hours, median (IQR)	0.9 (0.0–2.7)
Number of treating physicians/APPs, median (IQR)[d]	5 (1–9)

a Participants who completed the survey but left before being seen by a physician or advanced practice provider (APP)
b Participants who completed the survey but were never placed in a designated care space during their visit (eg, room or hallway bed). Most were seen by physicians/APP and discharged from the waiting area; however, this number includes individuals who left without being seen
c Participants admitted to the hospital from the ED did not have a length of stay recorded
d Participants admitted to the hospital from the ED did not have a number of treating physicians/APPs recorded

At baseline, 269 participants (43.1%) were interested in a referral for SUD treatment. After adjusting for potential confounders, increased time to room was significantly associated with interest in treatment referral (adjusted odds ratio [AOR] = 1.12, 95% confidence interval [CI] = 1.01–1.25) (**Table 3**). For every extra hour spent in the waiting room, participants had 12% higher odds of interest in treatment referral. Time to physician/APP was positively but not significantly associated with interest in treatment referral (AOR = 1.11, 95% CI = 1.00–1.24). Number of treating physicians/APPs was not significantly associated with interest in treatment referral (AOR = 1.06 [95% CI, 0.99–1.13]). There was a small but statistically significant association between longer length of stay in the ED and interest in treatment referral (AOR = 1.02, 95% CI = 1.00–1.05). A complete-case analysis showed the odds ratios remained despite a smaller sample size. In a sensitivity analysis with removal of 44 participants administered the survey before being roomed, results were similar. In an additional sensitivity analysis completed with removal of participants already enrolled in some form of substance use disorder treatment, longer time to room was more strongly associated with interest in treatment referral (AOR= 1.15, 95% CI 1.02–1.30) as was longer time to physician/APP (AOR=1.15, 95% CI 1.01–1.30), and the association between interest in treatment referral and length of stay lost statistical significance.

Within 30 days of the baseline ED visit, 201 (31.0%) participants engaged in SUD treatment. Time to room, time to physician/APP, number of treating physicians/APPs, and ED length of stay were not significantly associated with

Table 3. Association between ED operational metrics and interest in a substance use disorder treatment referral among participants in the Navigator Trial

ED Metrics	Unadjusted		Adjusted[a]	
	OR (95% CI)	p value	OR (95% CI)	p value
Time to room	1.12 (1.02–1.22)	0.01	1.12 (1.01–1.25)	0.03
Time to physician/ advanced practice provider (APP)	1.13 (1.03–1.24)	0.01	1.11 (1.00–1.24)	0.06
Number of treating physicians/APPs	1.10 (1.04–1.16)	<0.01	1.06 (0.99–1.13)	0.08
Length of stay in the ED	1.04 (1.02–1.06)	<0.01	1.02 (1.00–1.05)	0.04

a Adjusted for race, ethnicity, age, gender identity, insurance, housing stability, Center for Epidemiologic Studies Depression (CES-D) scale score, suicidality, current treatment status, emergency severity index (ESI) score, study site, visit related to overdose, pre- and post-COVID-19, ED volumes, left without being seen rate, and admission status

Table 4. Association between ED operational metrics and 30-day substance use disorder treatment engagement among participants in the Navigator Trial

ED Metrics	Unadjusted		Adjusted[a]	
	OR (95% CI)	p value	OR (95% CI)	p value
Time to room	1.08 (0.99–1.17)	0.10	1.07 (0.97–1.18)	0.16
Time to physician/ advanced practice provider (APP)	1.05 (0.96–1.15)	0.31	1.05 (0.95–1.16)	0.37
Number of treating physicians/APPs	1.02 (0.98–1.07)	0.40	1.00 (0.94–1.06)	0.98
Length of stay in the ED	1.01 (0.99–1.02)	0.14	1.01 (0.99–1.03)	0.35

a Adjusted for race, ethnicity, age, gender identity, insurance, housing stability, Center for Epidemiologic Studies Depression (CES-D) scale score, suicidality, current treatment status, emergency severity index (ESI) score, study site, visits related to overdose, pre- and post- COVID-19, ED volumes, left without being seen rate, and admission status

30-day treatment engagement (**Table 4**). Additionally, hospital admission from the baseline ED visit was not associated with increased odds of 30-day treatment engagement. Of note, interest in treatment referral at the baseline ED visit was associated with subsequent treatment engagement within 30 days (AOR = 2.09, 95% CI = 1.40–3.10).

LIMITATIONS

This study has several limitations. The associations between increased ED operational metrics and interest in treatment referral may in part be due to selection bias as some individuals who are not interested in treatment may be leaving against medical advice prior to being roomed or seen, and thus would not be captured by this study. Another important limitation is the length of time it takes to connect patients with SUD treatment as well as other reasons a patient may remain in the ED, such as homelessness. Such factors, specifically time spent connecting patients with SUD treatment, likely contribute to an increased length of stay and thus may contribute to the association between length of stay and interest in treatment. Additionally, time to room and time to physician/APP were highly correlated. Our metrics were recorded using EHR timestamps and likely reflect the practice of physicians marking that they have seen a patient on the EHR prior to physically seeing the patient. Similarly, 30-day SUD treatment engagement was measured via administrative data and may not reflect patient adherence. Additionally, while the survey was mostly administered after a patient was roomed, it was administered at different times throughout each visit and does not account for how interest in treatment referral may change throughout the visit. In addition, as the data originates from a randomized control trial, the study population likely has systematic differences from the general population of ED patients at risk of opioid overdose. Lastly, ED operational metrics cannot account for the many personal aspects of a patient's ED experience.

DISCUSSION

This observational study found that longer time to room in the ED was associated with greater interest in treatment referral among ED patients at high risk of opioid overdose. To our knowledge, this is the first study to investigate the association between ED operational metrics and SUD treatment readiness. Although we hypothesized that longer ED wait times would increase perceived stigmatization and, thus, negatively impact treatment interest, the results suggest this is not the case. Rather, patients who are already interested in receiving treatment may be willing to wait longer periods before being seen. Likewise, individuals not initially interested in receiving treatment may not be willing to wait for long periods and may be leaving before being seen.

Our findings challenge the notion that physicians/APPs should rush the care of patients who have been waiting to be seen for long periods, and rather consider that these patients may have waited specifically to engage in SUD treatment services. These patients may instead benefit from extra counseling and resources regarding treatment options such as medications for OUD, including methadone and buprenorphine. Additionally, our results could indicate that individuals not initially interested in receiving treatment may not be willing to wait for long periods and may be leaving before being seen. Early interventions for patients at high risk of opioid overdose, such as when they first arrive at the ED, or reducing wait time may allow physicians/APPs to reach individuals not initially interested in receiving treatment

and who may not be willing to wait for long periods. Additionally, the long length of ED stay (median of over 7 hours) represents substantial time for potential interventions.

Our results also support the notion that interest and engagement in SUD treatment is likely multifactorial and not likely to be significantly impacted by a single ED operational metric.[24-27] None of the ED operational metrics were associated with SUD treatment engagement within 30 days after the ED visit. However, patients who were interested in a treatment referral at the baseline ED visit were more likely to subsequently engage in treatment. Therefore, although ED operational metrics may not predict 30-day engagement in SUD treatment, our study suggests that increased efforts to identify and engage patients interested in treatment at the time of the ED visit may increase treatment enrollment.

In summary, in this observational study of ED patients at high risk of opioid overdose, longer wait time prior to rooming in the ED and longer length of stay were associated with higher odds of reporting interest in a referral to SUD treatment. ED operational metrics were not associated with SUD treatment engagement within 30 days of the ED visit; however, interest in treatment referral at the baseline ED visit was positively associated with subsequent engagement in treatment within 30 days. Our results suggest that patients who have waited for long periods in the ED may be waiting specifically to engage in treatment and warrant further resource investment. Further research is needed to determine if time of arrival at the ED could present as a key point of intervention to reach individuals not initially interested in receiving SUD treatment.

References

1. National Institute on Drug Abuse. Drug Overdose Death Rates. Published February 9, 2023. Accessed February 20, 2024. https://nida.nih.gov/research-topics/trends-statistics/overdose-death-rates
2. Prevent Overdose RI. Overdose Death Data. Accessed March 20, 2024. https://preventoverdoseri.org/overdose-deaths/
3. Ma J, et al. Effects of medication-assisted treatment on mortality among opioids users: a systematic review and meta-analysis. Molecular Psychiatry 24, 1868–1883 (2019).
4. Connery HS. Medication-Assisted Treatment of Opioid Use Disorder: Review of the Evidence and Future Directions. Harvard Review of Psychiatry 23, 63–75 (2015).
5. Sordo L, Barrio G, Bravo MJ, et al. Mortality risk during and after opioid substitution treatment: systematic review and meta-analysis of cohort studies. BMJ. 2017;357:j1550. doi:10.1136/bmj.j1550
6. Lagisetty PA, Ross R, Bohnert A, Clay M, Maust DT. Buprenorphine Treatment Divide by Race/Ethnicity and Payment. JAMA Psychiatry. 2019;76(9):979-981. doi:10.1001/jamapsychiatry.2019.0876
7. Santoro T, Santoro JD. Racial Bias in the US Opioid Epidemic: A Review of the History of Systemic Bias and Implications for Care. Cureus. 2018;10(12):e3733. doi:10.7759/cureus.3733
8. Larochelle MR, Bernson D, Land T, et al. Medication for Opioid Use Disorder After Nonfatal Opioid Overdose and Association With Mortality. Ann Intern Med. 2018;169(3):137-145. doi:10.7326/M17-3107
9. Gibbons JB, McCullough JS, Zivin K, Brown ZY, Norton EC. Racial and ethnic disparities in medication for opioid use disorder access, use, and treatment outcomes in Medicare. Journal of Substance Use and Addiction Treatment. 2024;157:209271. doi:10.1016/j.josat.2023.209271
10. Chambers LC, Hallowell BD, Samuels EA, Daly M, Baird J, Beaudoin FL. An evaluation of the association between specific post-overdose care services in emergency departments and subsequent treatment engagement. Journal of the American College of Emergency Physicians Open. 2023;4(1):e12877. doi:10.1002/emp2.12877
11. Kilaru AS, Xiong A, Lowenstein M, et al. Incidence of Treatment for Opioid Use Disorder Following Nonfatal Overdose in Commercially Insured Patients. JAMA Network Open. 2020;3(5):e205852. doi:10.1001/jamanetworkopen.2020.5852
12. Frazier W, Cochran G, Lo-Ciganic WH, et al. Medication-Assisted Treatment and Opioid Use Before and After Overdose in Pennsylvania Medicaid. JAMA. 2017;318(8):750-752. doi:10.1001/jama.2017.7818
13. Koyawala N, Landis R, Barry CL, Stein BD, Saloner B. Changes in Outpatient Services and Medication Use Following a Non-fatal Opioid Overdose in the West Virginia Medicaid Program. J Gen Intern Med. 2019;34(6):789-791. doi:10.1007/s11606-018-4817-8
14. Centers for Disease Control. Overdose Deaths and the Involvement of Illicit Drugs. Published January 23, 2023. Accessed March 20, 2024. https://www.cdc.gov/drugoverdose/featured-topics/VS-overdose-deaths-illicit-drugs.html
15. Cunningham, R. M. et al. Alcohol, tobacco, and other drugs: future directions for screening and intervention in the emergency department. Acad Emerg Med 16, 1078–1088 (2009).
16. Duber HC, Barata IA, Cioè-Peña E, et al. Identification, Management, and Transition of Care for Patients With Opioid Use Disorder in the Emergency Department. Annals of Emergency Medicine. 2018;72(4):420-431. doi:10.1016/j.annemergmed.2018.04.007
17. Hawk K, Hoppe J, Ketcham E, et al. Consensus Recommendations on the Treatment of Opioid Use Disorder in the Emergency Department. Annals of Emergency Medicine. 2021;78(3):434-442. doi:10.1016/j.annemergmed.2021.04.023
18. Huntley K, Einstein E, Postma T, Thomas A, Ling S, Compton W. Advancing emergency department–initiated buprenorphine. J Am Coll Emerg Physicians Open. 2021;2(3):e12451. doi:10.1002/emp2.12451
19. Vivolo-Kantor AM, Seth P, Gladden RM, et al. Vital Signs: Trends in Emergency Department Visits for Suspected Opioid Overdoses—United States, July 2016–September 2017. MMWR Morb Mortal Wkly Rep 2018;67:279–285. doi: http://dx.doi.org/10.15585/mmwr.mm6709e1
20. D'Onofrio G, McCormack RP, Hawk K. Emergency Departments—A 24/7/365 Option for Combating the Opioid Crisis. N Engl J Med. 2018;379(26):2487-2490. doi:10.1056/NEJMp1811988
21. Samuels EA, Wentz A, McCormick M, et al. Rhode Island's Opioid Overdose Hospital Standards and Emergency Department Naloxone Distribution, Behavioral Counseling, and Referral to Treatment. Ann Emerg Med. 2021;78(1):68-79. doi:10.1016/j.annemergmed.2021.02.004
22. D'Onofrio G, O'Connor PG, Pantalon MV, et al. Emergency Department–Initiated Buprenorphine/Naloxone Treatment for Opioid Dependence: A Randomized Clinical Trial. JAMA. 2015;313(16):1636-1644. doi:10.1001/jama.2015.3474
23. D'Onofrio G, Chawarski MC, O'Connor PG, et al. Emergency Department-Initiated Buprenorphine for Opioid Dependence with Continuation in Primary Care: Outcomes During and After Intervention. J Gen Intern Med. 2017;32(6):660-666. doi:10.1007/s11606-017-3993-2

24. Elliott L, Bennett AS, Wolfson-Stofko B. Life after opioid-involved overdose: Survivor narratives and their implications for ER/ED interventions. Addiction. 2019;114(8):1379-1386. doi:10.1111/add.14608
25. Hawk K, Grau LE, Fiellin DA, et al. A qualitative study of emergency department patients who survived an opioid overdose: Perspectives on treatment and unmet needs. Acad Emerg Med. 2021;28(5):542-552. doi:10.1111/acem.14197
26. Hawk K, McCormack R, Edelman EJ, et al. Perspectives About Emergency Department Care Encounters Among Adults With Opioid Use Disorder. JAMA Network Open. 2022;5(1):e2144955. doi:10.1001/jamanetworkopen.2021.44955
27. Galarneau LR, Scheuermeyer FX, Hilburt J, et al. Qualitative Exploration of Emergency Department Care Experiences Among People With Opioid Use Disorder. Annals of Emergency Medicine. 2023;0(0). doi:10.1016/j.annemergmed.2023.02.007
28. Olsen Y, Sharfstein JM. Confronting the Stigma of Opioid Use Disorder—and Its Treatment. JAMA. 2014;311(14):1393-1394. doi:10.1001/jama.2014.2147
29. Im DD, Chary A, Condella AL, et al. Emergency Department Clinicians' Attitudes Toward Opioid Use Disorder and Emergency Department-initiated Buprenorphine Treatment: A Mixed-Methods Study. Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health. 2020;21(2). doi:10.5811/westjem.2019.11.44382
30. Ellis K, Walters S, Friedman SR, et al. Breaching Trust: A Qualitative Study of Healthcare Experiences of People Who Use Drugs in a Rural Setting. Front Sociol. 2020;5. doi:10.3389/fsoc.2020.593925
31. Paquette CE, Syvertsen JL, Pollini RA. Stigma at Every Turn: Health Services Experiences among People Who Inject Drugs. Int J Drug Policy. 2018;57:104-110. doi:10.1016/j.drugpo.2018.04.004
32. Goedel WC, Marshall BDL, Samuels EA, et al. Randomised clinical trial of an emergency department-based peer recovery support intervention to increase treatment uptake and reduce recurrent overdose among individuals at high risk for opioid overdose: study protocol for the navigator trial. BMJ Open. 2019;9(11):e032052. doi:10.1136/bmjopen-2019-032052
33. Von Elm E, Altman DG, Egger M, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Ann Intern Med. 2007;147(8):573-577. doi:10.7326/0003-4819-147-8-200710160-00010
34. Beaudoin FL, Jacka BP, Li Y, et al. Effect of a Peer-Led Behavioral Intervention for Emergency Department Patients at High Risk of Fatal Opioid Overdose: A Randomized Clinical Trial. JAMA Network Open. 2022;5(8):e2225582. doi:10.1001/jamanetworkopen.2022.25582
35. Sonis JD, Aaronson EL, Lee RY, Philpotts LL, White BA. Emergency Department Patient Experience: A Systematic Review of the Literature. Journal of Patient Experience. 2018;5(2):101-106. doi:10.1177/2374373517731359

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