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Research Paper

Post opioid overdose outreach by public health and public safety agencies: Exploration of emerging programs in Massachusetts

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ABSTRACT

Background: Opioid overdose is a significant public health problem. Collaborative programs between local public health and public safety agencies have emerged to connect overdose survivors and their personal networks with harm reduction and addiction treatment services following a non-fatal overdose event. This study explored the prevalence of these programs in Massachusetts and the different ways they have been structured and function.

Methods: We sent an online screening questionnaire to police and fire departments in all 351 communities in Massachusetts to find instances in which they collaborated with a community-based public health agency to implement a post-overdose outreach and support program. We conducted telephone interviews with communities that implemented this type of program and categorized programs based on their structure, outreach approach, and other key characteristics.

Results: Police and fire personnel from 110 of the 351 communities in Massachusetts (31% response rate) completed the screening survey. Among respondents, 21% (23/110) had implemented a collaborative, community-based, post-overdose program with a well-defined process to connect overdose survivors and their personal networks with support services or addiction treatment services. Using data from the interviews, we identified four types of programs: (1) *Multi-Disciplinary Team Visit*, (2) *Police Visit with Referrals*, (3) *Clinician Outreach*, and (4) *Location-Based Outreach*.

Conclusions: This study represents the first attempt to systematically document an emerging approach intended to connect opioid overdose survivors and their personal networks with harm reduction and addiction treatment services soon after a non-fatal overdose event. These programs have the potential to increase engagement with the social service and addiction treatment systems by those who are at elevated risk for experiencing a fatal opioid overdose.

Introduction

The United States is in the midst of an opioid overdose epidemic, involving both heroin and synthetic opioids (O'Donnell, Gladden, & Seth, 2017). Opioid-related overdose deaths increased three-fold in the U.S. between 2000 and 2015–with 33,091 cases in 2015 alone (Rudd, Seth, David, & Scholl, 2016). Individuals who experience a non-fatal overdose event are at elevated risk for overdose in the future (Darke, Mills, Ross, & Teesson, 2011; Stoove, Dietze, & Jolley, 2009). From a public health perspective, non-fatal overdose survivors constitute a high priority group and a logical point of intervention to reduce overdose mortality rates.

Emergency departments (EDs) are a common setting for programs designed to reach and engage people who have an opioid use disorder and those who have experienced a non-fatal overdose (e.g., D'Onofrio & Degutis, 2010; D'Onofrio et al., 2017; Dwyer et al., 2015; Trowbridge et al., 2017). Examples in this area have included interventions to provide overdose education and naloxone rescue kits to patients (Dwyer et al., 2015; Samuels, 2014), connect patients to peer-recovery coaches (Samuels, 2014), link individuals with office-based addiction clinics and methadone maintenance programs (Trowbridge et al., 2017), and initiate

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buprenorphine treatment directly in the ED (D'Onofrio et al., 2017). Despite advances in this area and wider diffusion of ED-based interventions, many overdose survivors do not receive this type of support prior to discharge from a medical facility (Naeger, Mutter, Ali, Mark, & Hughey, 2016; Rosenthal, Karchmer, Theisen-Toupal, Castillo, & Rowley, 2016).

Recently, a new group of programs has emerged that attempts to reach and engage non-fatal opioid overdose survivors in community-based settings using collaborations between local public health and public safety agencies. These programs are not intended to replace ED-based interventions; rather, they are intended to reach individuals who leave ED settings without being connected to addiction treatment services, those who are not ready to accept services that have been offered in the ED (Pollini, McCall, Mehta, Vlahov, & Strathdee, 2006), those who refuse transport to a medical facility after an overdose (Vilke, Sloane, Smith, & Chan, 2003; Wampler, Molina, McManus, Laws, & Manifold, 2011), and those who don't come to the attention of the medical system. These programs also offer the opportunity to engage the personal networks of overdose survivors; a group that may not always be present during an ED-based interaction, yet one that is known to play an important role in the lives of many individuals with a substance use disorder (Kerensky & Walley, 2017; Ventura & Bagley, 2017).

To date, there are few descriptions of public health and public safety post-overdose programs in the peer reviewed literature. Wagner, Bovet, Haynes, Joshua, and Davidson (2016) described a variation of this approach in which sheriff's deputies at overdose scenes provided overdose prevention information, lists of local support services, and contact information for an addiction treatment agency. When deputies obtained contact information for an overdose survivor, a case manager contacted them within 24-h to assess their interest in treatment and to schedule an intake visit (Wagner et al., 2016). In another example, police officers provided voluntary screening and referral to addiction treatment to people with opioid use disorder who presented at the police station (Schiff, Drainoni, Bair-Merritt, Weinstein, & Rosenbloom, 2016; Schiff et al., 2017). Outside of the peer reviewed literature, multiple press reports from across the U.S. have documented the deployment of post-overdose outreach teams in which public health and public safety personnel conducted home-based outreach visits in the days following a non-fatal overdose event (e.g., Barnes, 2017; Mayhew, 2017; Zezima, 2017). The prevalence of these programs and their characteristics are largely unknown.

To address this gap, we conducted a study in Massachusetts to: (1) assess the prevalence of collaborative, community-based, post-overdose programs that connect overdose survivors and their personal networks with support or addiction treatment services and (2) describe the structure and function of these programs. First, we present findings from a screening survey sent to all police and fire chiefs in Massachusetts. Second, we report findings from telephone interviews conducted with selected programs on key program characteristics.

Data and methods

Setting and participants

The study occurred in Massachusetts between December 2015 and December 2016. For the purposes of the study, the term "public safety agency" was used to refer to emergency first responder agencies in the community (e.g., police, firefighters, emergency medical technicians). The term "public health agency" was used to refer to agencies in the community that provide a broad range of social and addiction treatment services (e.g., drug counselors, social workers, addiction treatment counselors, outreach workers). In the first phase of the study, we sent a screening questionnaire to police and fire departments in all 351 communities in Massachusetts. In the second phase of the study, we conducted interviews with spokespersons from 20 communities that had implemented a collaborative, community-based, post-overdose program that employed a protocol to connect overdose survivors and their personal networks with support services or addiction treatment services. The Massachusetts Department of Public Health IRB reviewed and approved all study procedures.

Measures

The online screening questionnaire consisted of six questions designed to identify programs of interest. Respondents were first asked whether they provided outreach or referral services to people who use opioids or their personal networks. Those who responded affirmatively were asked whether any of these services were delivered in collaboration with other agencies. If so, they were asked to identify all agencies collaborating on the program. Those who were implementing a collaborative program were asked whether the program specifically targeted individuals who had recently experienced an overdose and their personal networks. Those who responded affirmatively were asked to describe the program and indicate whether we could contact them for a follow-up interview.

The telephone interview protocol consisted of 18 questions organized into six sections: (1) program description (what led to the development of the program; what were the program's goals; how was the program organized; what did program staff do); (2) how individuals were identified (how did they find and select people to contact; how did they locate and make contact with people); (3) interaction with contacts (what did they do after they made contact); (4) follow-up (did they try to follow up with people after the initial contact); (5) evaluation (did they do anything to document or evaluate the program); and (6) what did they learn (what were the best ways to contact people; what were the most helpful services for the people they contacted; how did contacts respond to the program; what characteristics made for an effective staff member; what collaboration among organizations worked best; what would they tell others interested in developing programs like this). Interviewers used probes to elicit more detail and pursued interesting lines of inquiry that emerged during the interviews.

Procedure and analysis

Screening survey data were collected using SurveyGizmo (secure online software suite). We worked with the Massachusetts Chiefs of Police Association and the Massachusetts Department of Fire Services to distribute the survey link to their contact lists. Data collection occurred between December 2015 and January 2016. All data were exported into IBM SPSS Statistics Version 24 to generate descriptive statistics. We used the results from the screening survey to identify communities with a collaborative, community-based, post-overdose program. We examined the narrative description of each program and selected those that: (1) were operational at the time of the assessment, (2) included an active outreach component, and (3) had a well-defined protocol to connect overdose survivors and their personal networks with support or addiction treatment services. We excluded programs that: (1) only provided passive services (e.g., left behind a pamphlet without further follow-up); (2) were not specifically targeting individuals who had recently experienced an overdose and/or their personal networks; (3) were not operational; and (4) did not provide sufficient detail to determine the services they provided.

Interview data were collected between February and March 2016 with representatives from programs that met the screening criteria. We conducted 20 telephone interviews lasting 60 to 90 min with key spokespersons from each program. Spokespersons included the police or fire chief who responded to the survey and/or a designee they identified as the most knowledgeable person about the program. Interviewers took extensive notes and recorded the interviews.

Interview data were analyzed using a sequential qualitative content analysis approach (Cho & Lee, 2014; Miles, Huberman, & Saldaña, 2014). Three members of the study team (SF, LW, BR) independently created first-order codes for each question in the interview protocol for all 20 interviews. We used Microsoft Excel to store and manage the dataset. The coders met multiple times to discuss the coding and to resolve inconsistencies. This process continued until we arrived at the most meaningful and parsimonious set of codes that represented all comments. Following the first round of coding, we created a set of second-order codes by collapsing conceptually similar themes. All members of the study team participated in the review of second-order codes and final interpretation.

Results

We received valid survey responses from 31% (110/351) of the communities in Massachusetts. Overall, 58% (64/110) of respondents were police chiefs and 42% (46/110) were fire chiefs. Respondents tended to be from larger communities (median population = 19,250) compared to communities that did not respond to the survey (median population = 6916). Responses were received from 10 of the 11 most populous communities, including Boston, and were geographically distributed across 13 of the 14 counties in the state.

Among survey respondents, 58% (64/110) reported that their public safety agency delivered outreach or referral services to people who use opioids or their personal networks. Fifty-five percent (55%) of respondents (60/110) reported that their agency collaborated with a public health agency to implement these services. Thirty percent (30%) of respondents (33/110) reported that their program specifically targeted individuals who recently experienced an overdose and/or their personal networks. After applying the exclusion criteria, 21% (23/110) were determined to be actively implementing a collaborative, community-based, post-overdose program with an active outreach component and a well-defined process to connect overdose survivors and/or their personal networks with support services or addiction treatment services.

Interviews were conducted with 87% (20/23) of the communities that met the selection criteria. Twenty-six individuals participated in the 20 telephone interviews. Sixteen of the interviews were conducted with a single respondent and four were conducted with multiple respondents. The professional role of respondents was: police chief ($n = 10$), social service agency staff ($n = 6$), police officer ($n = 5$), fire chief ($n = 3$), firefighter ($n = 1$), and emergency medical services (EMS) chief ($n = 1$). The communities represented by interview respondents were geographically distributed across 9 of the 14 counties in Massachusetts and had a median population of 28,576 (range: 10,303 to 95,072).

We organized the results from the interviews into three main sub-sections: (1) program impetus and goals, (2) program organization and structure (team composition, outreach approach, staffing), and (3) program operation and implementation (funding, interactions with contacts, facilitators, barriers, evaluation).

Program impetus and goals

Eighteen of the programs (18/20) emerged in response to observed increases in fatal and non-fatal opioid overdose cases, substance-related crime, and/or opioid-related emergency service calls. As one respondent described, "We had four fatal overdoses in the first three months of 2015 and were on pace to double our rate from 2014" (Police Chief 8). Most of the programs (17/20) were less than a year old at the time of the study – a period of time that coincided with a sharp increase in opioid overdose fatalities in Massachusetts (Massachusetts Department of Public Health, 2017). The mechanism through which programs were developed varied by site. Roughly half of the programs (9/20) were developed by an influential police or fire chief. As one respondent reported, "When I became chief, I wrote a drug strategy that framed what everyone's job was to drive down drug use. Part of this was assisting drug-addicted people getting into treatment" (Police Chief 1). The other programs arose out of local planning groups or coalitions that included public health and public safety representatives (5/20), calls to action from the local community (4/20), and mandates from local elected officials (2/20).

All of the programs (20/20) reported that their goal was to engage opioid overdose survivors and provide them with information, support, and connections to social or substance abuse treatment services. Half of the sites (10/20) specifically mentioned that they tried to reach the personal networks of overdose survivors in addition to the survivor. Respondents also mentioned that their program attempted to contribute to a coordinated system of care within the community (5/20) and tried to reduce stigmatization of people who use drugs (5/20). These latter themes are represented in the following quote:

> *Our goal is to get each person that's identified to agree to work with our clinician and our staff to develop an intervention plan that suits them. Two-thirds of them have told us to go pound sand, but of those two-thirds, many have called back and said, 'you know what . . . I'm ready.' . . . and we go into action at that point. Our goal is to create a culture in the community where when a person decides they're ready, they can call the police. We're also working to address the issue of stigma. Just having the police chief out there in the forefront talking about this. Particularly in a white picket-fence community* (Police Chief 10)

Program organization and structure

The most common team configuration consisted of police and clinicians working together (13/20). Other configurations included police, fire/EMS, and clinicians working together (3/20), fire/EMS working with clinicians (2/20), fire/EMS and clinicians working with a member of the faith community (1/20), and police and clinicians working with a member of the faith community (1/20) (see Table 1).

Despite commonalities in the impetus and goals of these programs, sites varied in the ways they operated and the roles of participating agencies. Four distinct types of programs emerged from the data (see Table 2).

Multi-disciplinary team visit (n = *8)*

In these programs, a public safety representative (police, fire, EMS) and one or more public health representatives (substance use counselors, social workers, outreach workers) travel together to the residence of the overdose survivor or site of an overdose shortly following the event. They assist survivors and members of their personal network with support services and connections to addiction treatment services. The public health representative

Table 1
Sector Representation and Contact Method by Program Type ($n = 20$).

	Police	Fire/EMS	Clinician[a]	Faith
Multi-Disciplinary Team Visit ($n = 8$)				
Community A	–	Visit	Visit	Visit
Community B	Visit	–	Visit	–
Community C	Visit	–	Visit	–
Community D	Visit	–	Visit	Visit
Community E	Visit	Visit	Visit	–
Community F	–	Visit	Visit	–
Community G	Visit	Visit	Visit	–
Community H	Visit	–	Visit	–
Police Visit with Referrals ($n = 4$)				
Community I	Visit	–	Referred	–
Community J	Visit	–	Referred	–
Community K	Visit	–	Referred	–
Community L	Visit	–	Referred	–
Clinician Outreach ($n = 6$)				
Community M	Referrer	–	Embedded	–
Community N	Referrer	–	Embedded	–
Community O	Referrer	–	Embedded	–
Community P	Referrer	Referrer	Embedded	–
Community Q	–	Referrer	Referred	–
Community R	Referrer	–	Referred	–
Location-Based Outreach ($n = 2$)				
Community S	Station	–	Referred	–
Community T	Center	–	Center	–
Total ($n = 20$)	17	6	20	2

[a] Includes licensed clinical social workers, drug use counselors, therapists, psychologists.

generally takes the lead in these interactions. The public safety representative secures the site and provides support, as needed:

> *We formed three-person teams of outreach workers, drug counselors, police officers, and chaplains or faith community people who volunteer to serve. They visit homes of people who recently overdosed. When they visit, they offer services to families and the person who overdosed with the goal of getting them into treatment.* (Outreach Worker 16)

Police visit with referral (n = *4)*

These programs involve police traveling to the residence of the overdose survivor or the site of an overdose shortly following the event. The officer provides overdose survivors and members of their personal network with information on support group schedules and addiction treatment options. If the survivor is ready to accept services, the police officer makes a referral to a partnering social service or addiction treatment program. Staff members at the social service or addiction treatment facility then conduct an assessment and determine the appropriate services for the individual (e.g., detoxification, inpatient treatment, medication for opioid use disorder). As one respondent described:

> There are a couple of officers who are point people for this program called Intervention Specialists. We've paired with [a community-based addiction treatment provider] to have them help us when we need assistance. We had an overdose last night. Non-fatal. Now what we'll do is reach out to that guy or his immediate family and see if he's on his way to drug treatment or if there is a plan. We might then use [our public health partner] to see if there is a suitable treatment facility for that person (Police Chief 1)

Clinician outreach (n = *6)*

In this program type, a clinician (e.g., licensed clinical social worker, drug use counselor, therapist, psychologist) receives contact information for an overdose survivor or a member of their personal network. The clinician is embedded within a police department or employed at a partnering social service or addiction treatment program. Referrals to the clinician are based on information gathered at the overdose scene or reviews of emergency call logs. The clinician conducts phone-based outreach to connect contacts with appropriate services. One respondent described the process as follows:

> *We partnered with [a social services organization]. A case manager and clinician from this organization are embedded in our station. If we have someone overdose, they follow-up and try and get a hold of the person and steer them towards treatment. I go through the police log every morning and look for overdose cases. Then, I ship it right to them. Officers will walk in and give them a police report . . . That's the whole thing with them being embedded here. They would never get that stuff if they were working out of a building somewhere else* (Deputy Police Chief 2)

Location-Based outreach (n = *2)*

These programs encourage non-fatal overdose survivors, people with an opioid use disorder, and family or associates to visit a community-based site to obtain information, resources, and/or access to services. Information about the program is disseminated through traditional and social media, word-of-mouth, and promotion by first responders at overdose scenes. For example, one community offered connections to an addictions treatment provider for anyone with an opioid use disorder who voluntarily came to the police station. Another community set-up a drop-in center staffed by a variety of providers:

> *We have a drop-in center that is a safe place for individuals and families suffering the effects of a substance use disorder to come get information, knowledge, and assistance navigating the continuum of care and peer support. There are officers there and licensed clinicians and [Peer Support Workers] – people who've been clean*

Table 2
Post-OD Outreach Program Types and Characteristics ($n = 20$).

	Multi-Disciplinary Team Visit ($n = 8$)	Police Visit with Referrals ($n = 4$)	Clinician Outreach ($n = 6$)	Location-Based Outreach ($n = 2$)
Type of Outreach	Post-OD visit to residence of OD survivor or site of the OD event	Post-OD visit to residence of OD survivor or site of the OD event	Post-OD telephone-based outreach to OD survivor	Media and word-of-mouth outreach to whole community (including OD survivors)
Role of Public Safety Personnel	Attend visit. Assist public health representative, as needed.	Attend visit. Provide information and resources. Make referral to public health representative	Identify and provide cases to clinician based on call logs and personal knowledge	Assist in staffing community center and making linkages or referrals to public health representatives
Role of Public Health Personnel	Attend visit. Provide information and referrals to OD survivor, family, and associates.	Contact individuals referred by police to help link them with appropriate services.	Contact individuals referred by public safety to help link them with appropriate services.	Assist in staffing community center and/or connecting with individuals referred by police to help link them with appropriate services.

for two years who help shepherd visitors and partner people with guidance and advice (Police Chief 5)

Respondents emphasized the importance of finding the right people to staff these different programs, especially staff members from public safety agencies. As one respondent described:

You need a person that's caring, that's focused, and that can express themselves. That's who we put in these positions. It's important to have the right person. I can think of a dozen people I would never send to a door. It's not that they're not good policemen; it's just that this isn't their thing. It's not for everybody. You can't just have the area cop go to the house. You absolutely cannot do that. The personality has to be right (Police Chief 17)

Another commented on the need for officers to use a humanistic approach, "Crank it up and be a cop when they have to, but take it back a few notches and take a humanistic approach when it's necessary . . . and being able to determine when each approach is needed" (Police Chief 14). Additional themes included being knowledgeable about working with overdose survivors (10/20); personable, friendly, and approachable (10/20); caring and empathetic (9/20); non-judgmental (7/20); committed to the work (7/20); and patient (6/20). Respondents noted that public safety personnel were either selectively chosen for these assignments or volunteered.

Fifteen the programs (15/20) reported that they provided training to staff members on topics such as opioid use disorder, overdose response, communication skills, compassion, and stigma. As described by one respondent, "We've had multiple trainings on stigma and substance use disorder for my officers on this program and for the whole department. Our clinician has done it during roll calls" (Police Chief 10). In most instances, the public health partner delivered the training to public safety personnel.

Program operation and implementation

The public safety component of these programs was almost always funded as part of normal shift hours from Department budgets (19/20). Some respondents (7/20) reported that they also allocated over-time hours for public safety personnel. Respondents reported that the public health component was funded as part of normal business hours (11/20) or through external grant support (8/20). Programs with a clinician embedded within a police department (4/20) all reported that the clinician was grant-funded.

The program sites varied in how they approached overdose survivors and members of their personal networks. Thirteen programs (13/20) reported that they adhered to a harm reduction approach grounded in the principle of offering services that reduce the harms associated with substance use (e.g., overdose prevention with naloxone kits, connections to syringe services programs, and connections to addiction treatment services without coercion). The services offered by these programs were not contingent on commitment or readiness to engage in addiction treatment or abstinence. As one respondent described:

We try to send the message that we're there to help. We're not there to put you in jail or give you a hard time or tell you to stop shooting dope. None of that stuff. We talk to each person, whether it's a drug user, parent, or partner, and we try to tailor it to that person or individual (Outreach Worker 18)

Another respondent said, "I think [our approach is] really about consistency and making our program valued to them. Telling them that this is not a one-time shot . . . we're there to continue to support them regardless of where they are in their use" (Outreach Worker 16).

Five programs (5/20) followed a harm reduction approach, but assisted family members who wanted to file paperwork to initiate involuntary commitment of the overdose survivor to a court-ordered addiction treatment facility. As one respondent described, this was only done as an option of last resort:

If there's an overdose, [a clinician] follows up and tries to get a hold of the person. Tries to help them to access treatment. If she talks to family she'll refer them to get Narcan, tell them about [family support groups], so it's not just the addict they are reaching out to, it is the family too. She will explain how to look into [involuntary commitment to addiction treatment] if few alternatives remain for their loved one (Deputy Police Chief 2)

Two programs (2/20) actively promoted involuntary commitments to a court-ordered addiction treatment facility when the overdose survivor was not willing to voluntarily engage in treatment services. As described by one respondent, the police in these programs acted as the court petitioner to have the individual committed:

There's a value in bringing people to court and having a consequence . . . People want to help their loved ones, but it's just hard to go to court and actually commit your son or daughter. What we've done is we go to court as police and petition the court for [involuntary commitment to substance abuse treatment] (Police Chief 17)

Respondents indicated that the creation of broad partnerships with multiple individuals and agencies in the community facilitated implementation of the program (7/20). As one respondent said, "Don't recreate the wheel. The biggest lesson I learned is go talk to people who are already doing this. Don't sit and try to Google your way out of it to come up with solutions" (EMS Chief 4). Other respondents reiterated the importance of finding the right staff members (6/20), maintaining open communication with the community and adopting a transparent process (5/20), and securing high level support and buy-in from community leaders (5/20). Several respondents (5/20) vocalized the need to put contacts at ease during outreach encounters:

The first couple of times we went out, I don't think we got to the point right away . . . So people seemed a little nervous. [They thought] we were there to do some kind of inspection, tell them they were going to lose their house, or inform them that they just lost a loved one. Now, we try to let them know exactly what we're there for. Just get right to the point right away (Outreach Worker 18)

Respondents indicated that stigma was the most common barrier to implementation (11/20). This was an issue within public safety agencies and the community at large. As described by one respondent:

Attitude change is difficult. Culture change is difficult. We still have some attitudes that need to change even inside the department. I think [the assigned officer] is probably the most picked on employee at the police department. You know. Guys will say, 'Put handcuffs on those people. You're not a social worker. What the hell are you doing?' There are a lot of dinosaurs around the Department that still think like that. (Police Chief 6)

Other respondents (8/20) reported that lack of funding and long-term sustainability were barriers to implementation. One respondent said, "The hardest part is going to be money. It costs money to do the program right. We're fortunate that we received a grant, but it is going away eventually" (Fire Chief 5). Additional barriers to implementation included navigating the addiction treatment system (4/20), gaining support from the community (3/20), union rules and town politics (3/20), and rushing to implementation without careful planning (2/20).

Almost all respondents reported they engaged in program evaluation. Evaluation activities included documenting the

number of outreach contacts (12/20), describing actions taken during encounters (6/20), tracking the number of referrals (6/20), and documenting the number of referrals resulting in connections with providers (5/20). Two respondents (2/20) collected anecdotal accounts from overdose survivors and their personal networks about the short-term outcomes of the program.

Discussion

We identified four distinct types of post-overdose outreach programs in communities in Massachusetts. These programs emerged in response to observed increases in opioid overdoses at the community level and perceived gaps in the existing support system. Interview respondents reported similar goals for these programs, identified similar desirable characteristics of staff members, mentioned similar facilitators and barriers to implementation, and engaged in similar evaluation activities. The programs varied in the composition of the team members, outreach approach, the way the public health component was funded, and the extent to which the program used coercion to force overdose survivors into addiction treatment.

Research has found that overdose survivors who talk to someone following the event are more likely to seek and enroll in addiction treatment services (Pollini et al., 2006), particularly when a direct connection is made rather than just providing information and relying on the individual to seek services on their own (D'Onofrio & Degutis, 2010). A key objective of the programs in this study was reaching overdose survivors and their personal networks and providing them with community-based, direct connections to social and addiction treatment services. In most instances, these programs acted as a secondary safety net for overdose survivors and their personal networks who came to the attention of the emergency services system but did not receive these connections in an emergency department setting.

This set of programs is one example of a broad pattern of change in the role law enforcement agencies are beginning to play in response to the opioid overdose epidemic. States are increasingly equipping law enforcement personnel with naloxone rescue kits (Davis, Ruiz, Glynn, Picariello, & Walley, 2014; Davis, Walley, & Bridger, 2015; Wagner et al., 2016) and passing Good Samaritan laws that offer limited immunity from drug possession charges for people who call for help during an overdose (Banta-Green, Beletsky, Schoeppe, Coffin, & Kuszler, 2013; Davis, Webb, & Burris, 2013). While studies have found generally positive attitudes among law enforcement officers concerning these changes (Ray, O'Donnell, & Kahre, 2015; Saucier, Zaller, Macmadu, & Green, 2016; Wagner et al., 2016), not all officers embrace these changes to their traditional roles of investigation and arrest (Banta-Green et al., 2013; Green et al., 2013). In our study, respondents cited departmental culture change as a barrier to implementation. One approach to addressing this issue was to choose appropriate public safety program personnel to work on the program or relying on volunteers. Departments interested in adopting one of these programs may benefit from assessing the attitudes of officers beforehand and proactively addressing any concerns.

Loss of privacy is a potential source of harm associated with these programs. Personal information collected by law enforcement agencies and fire departments does not receive the same protection as personal information collected via health-related encounters. Data sharing between public safety and public health agencies has the potential to focus attention on individuals and communities in undesirable ways. It could, for example, lead to eviction, stigma, social control, or other adverse consequences. Such a development could result in reduced rates of calling emergency services by overdose witnesses (Davidson, Ochoa, Hahn, Evans, & Moss, 2002; Koester, Mueller, Raville, Langegger, & Binswanger, 2017; Tracy et al., 2005) and less cooperation with public health agencies by people at highest risk for overdose. Communities implementing these types of programs may want to develop data sharing agreements and protocols that clearly describe data use guidelines.

The use of coercive practices to force people into court-ordered addiction treatment is another potential source of harm associated with these programs. The efficacy of this approach with overdose survivors is not well documented and there are unresolved ethical and civil rights questions surrounding this practice (Kerensky & Walley, 2017; Walton & Hall, 2017; Werb et al., 2016). One-third of the programs in our study reported the use of involuntary commitment as a potential outcome of their interaction with an overdose survivor or their personal network. Similar to the potential negative effects of loss of privacy, the misuse of this practice could result in reduced calls to emergency services during an overdose and strained relations with public health and public safety personnel. Communities interested in one of these programs may want to discuss the extent to which they plan to use involuntary commitments and communicate their decision to all staff members and the community beforehand.

Public safety personnel do not typically receive training on the most appropriate social or addiction treatment services for overdose survivors and their personal networks. Schiff et al. (2017) found, for example, that officers in their study were more likely to refer people to detoxification services rather than evidence-based medication treatment. While three of the program types we found in this study involve direct contact between a clinician and overdose survivors and their personal networks, the *police visit with referral* program type does not. Officers in this type of program might need additional training on making referrals to a clinician who can conduct a formal assessment and determine the best option for each individual.

Finally, the effectiveness of the types of programs described in this paper remains largely untested. Wagner et al. (2016) found that one-third of overdose survivors who were contacted by a clinician within 24-h of the event made at least one visit to an addiction treatment provider. Schiff et al. (2017) found that a voluntary police-led treatment referral program was able to successfully place three-quarters of those seeking addiction treatment services. Further research is needed to determine whether the types of programs described in this study could produce similar placement outcomes.

Limitations

Several factors limit the conclusions that can be drawn from our study. First, the modest survey response rate does not allow us to make statements about the prevalence of these models statewide. We found that one-fifth of respondents were implementing one of these models. Whether a similar proportion exists among the two-thirds of communities that did not respond remains unknown. This also limits our knowledge of whether the four types of programs we identified are exhaustive of all possible configurations of post-overdose outreach programs. Second, it is unclear whether these findings are generalizable beyond Massachusetts. These programs grew out of a state-specific surge in overdose cases in a short period of time. Their frequency in other states and regions may vary considerably based on local epidemiological patterns in overdose rates. Third, we did not interview representatives from all 23 communities that we identified. This was an exploratory study. Available resources constrained the number of interviews we conducted and the depth of these interviews. The three programs we didn't interview were each *police visit with referral* programs. Results from the survey showed that their descriptions were identical to the programs we did interview. We selected the four

programs in this category with the best descriptions. It is possible that our findings would have varied if we had included these sites and if we had interviewed more individuals within each site. Finally, we did not interview any program recipients as part of this study. This could have contributed valuable information to our understanding of the acceptability of these services among overdose survivors and members of their personal networks.

Conclusions

We believe this to be the first systematic investigation of an emerging set of programs that have not yet received attention in the peer reviewed literature. Although this study has several important limitations, the findings help identify four different approaches to conducting post-overdose outreach at the community level by leveraging the existing public health and public safety infrastructure. These programs warrant further study as a strategy for increasing engagement with the social service and addiction treatment systems by those who are at elevated risk for experiencing a fatal opioid overdose.

Conflicts of interest

The authors declare no conflicts of interest.

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