Winograd *et al. Health & Justice* (2024) 12:49
https://doi.org/10.1186/s40352-024-00309-1

Health & Justice

RESEARCH Open Access

Improving first responders' perceptions of overdose events and survivors through tailored occupational health-focused training co-facilitated by overdose survivors

Rachel Winograd[1*], Phillip L. Marotta[1], Meghan M. O'Neil[2], Saad Siddiqui[1], Elizabeth Connors[1], Anna La Manna[1,3], Jeremiah Goulka[4] and Leo Beletsky[4]

Abstract

Background First responders (law enforcement officers, emergency medical services, and firefighters) frequently interact with people who use drugs (PWUD). Based on the nature and outcomes of such encounters, these interactions have the potential either to reduce harm, or perpetuate it. Given increased funding and attention for first responder-led interventions involving PWUD, we must identify the most critical training for improving negative beliefs about these interventions and populations. In this study, we aimed to develop and evaluate a novel, evidence-based first responder training with an occupational wellness framing aiming to increase knowledge regarding and improve attitudes toward people who overdose and toward the overdose antidote, naloxone.

Methods We developed and evaluated the DOTS/SHIELD (Drug Overdose Trust & Safety/Safety & Health Integration in the Enforcement of Laws on Drugs) first responder training with three components: (1) matched first responder and overdose survivor trainers; (2) locally tailored substance use service information and practical referral instructions; and (3) occupational health content designed to make first responders' jobs easier and safer. We conducted pre- and post-tests at 151 Missouri-based trainings (December 2020–May 2023) to assess associated attitudinal changes among law enforcement vs. emergency medical services [EMS]/fire.

Results Among the matched sample ($N = 1,003$, 53.9% law enforcement), post-training attitudes toward people who overdose and toward naloxone were more positive than pre-training attitudes. On average, law enforcement held worse attitudes than EMS/fire toward people who overdose, though there were no professional differences in naloxone-related beliefs.

Conclusions This training approach effectively combines three training components – peer trainers, practical substance use service referral information, and an occupational wellness framing – to positively influence first responders' views toward those who use drugs and toward naloxone.

*Correspondence:
Rachel Winograd
rachel.winograd@umsl.edu
[1]University of Missouri–St. Louis, St Louis, USA
[2]Michigan State University, East Lansing, USA
[3]Washington University in St. Louis, St Louis, USA
[4]Northeastern University, Boston, USA

Introduction

Drug overdose is a leading cause of injury mortality in the US (Centers for Disease Control and Prevention, 2023b) with nearly 110,000 overdose deaths between October 2022 and 2023 (Centers for Disease Control and Prevention, 2023a). First responders (law enforcement officers [LEO], emergency medical services [EMS], and firefighters) are on the front lines of this crisis, leading to frequent interactions with people who use drugs (PWUD) (Ashburn et al., 2020; Champagne-Langabeer et al., 2020; Footer et al., 2023; Lloyd et al., 2023; McCarthy et al., 2019). First responders interact with PWUD across multiple settings and contexts, such as overdose response calls, traffic stops, domestic violence disputes, and drug arrests. These interactions can serve as inflection points leading to reduced overdose fatalities and other improved public health outcomes, or conversely, to additional harm (Reichert et al., 2023a). As such, there is great potential benefit of improving these interactions to support better outcomes among PWUD as well as occupational wellness among first responders.

Potential for first responders to perpetuate or reduce harm

The overdose crisis has spiraled in part due to overlapping system failures – including criminalization and inadequate healthcare access for PWUD (Reichert & Gleicher, 2019) – leaving first responders with heavier workloads and expanding scopes of practice, burnout, and trauma (Friedmann et al., 2013). Even for bystanders witnessing overdoses, policy-level encouragement through Good Samaritan Laws, which offer various levels of protection from arrest and prosecution for people who report overdose events, have had mixed results due to obtuse language, loopholes, and lack of awareness among law enforcement and the general public (Richardson et al., 2023). Despite the proliferation of Good Samaritan laws nationwide, PWUD continue to experience negative interactions with LEO and EMS (Smiley-McDonald et al., 2022). Such interactions may include confiscation of healthcare supplies like syringes (Beletsky et al., 2014; Ray et al., 2022) or naloxone (Baker et al., 2020; Deonarine et al., 2016). It may also include arrest and incarceration (Doe-Simkins et al., 2022; Morales et al., 2018; Ostrach et al., 2024). Even as part of overdose rescue, PWUD may experience mistreatment that includes "slamming" naloxone (i.e., giving too much and precipitating distressing withdrawal symptoms) (Farrugia et al., 2019), verbal abuse (Baumgart-McFarland et al., 2022), or shaming (Friedman et al., 2021; Selfridge et al., 2020). Such practices by first responders can cascade into health harms, such as unsafe injection practices like rushed injection, injection into groin and neck, and syringe sharing. These behaviors translate to increased risk of HIV (Beletsky et al., 2013). They may also aggravate risk of fatal overdose through a decreased willingness among PWUD to seek substance use services (Ray et al., 2022), enhanced feelings of shame (Bolster et al., 2023; Volkow et al., 2021), stigma (del Pozo et al., 2021; Footer et al., 2023; Ondocsin et al., 2020), and, in the case of drug seizures, an *increase* in localized overdose events (Ray et al., 2022).

Given the escalating overdose crisis and the simultaneous political and cultural shift to decrease criminalization of drug use (Drug Policy Alliance, 2024; Lopez, 2016), there has been an increase in first responder-led initiatives to steer people toward substance use treatment rather than incarceration (Siddiqui et al., 2024; Substance Abuse and Mental Health Services Administration [SAMHSA], 2023; Worthington et al., 2022). Regarding overdose response, many police carry naloxone and report wanting to do more to reduce overdose (Ager et al., 2023; Buchheit et al., 2021; White et al., 2021; Xavier et al., 2023). There is also a corresponding increase in post-overdose outreach programs (Bagley et al., 2019; Bailey et al., 2023; Formica et al., 2021) providing handoffs to substance use resources. Broader than overdose events themselves, more LEO departments are launching co-response programs pairing police with mental health professionals (Uding et al., 2024; Curry et al., 2023; The Council of Statement Governments Justice Center, 2019; Worthington et al., 2022) to more effectively respond to individuals experiencing behavioral health crises (Bailey et al., 2018). The nature and outcomes of interactions between first responders and PWUD are influenced by a multitude of factors, including but not limited to responders' beliefs about PWUD and the interventions designed to serve them.

First responder perceptions toward PWUD and overdose

Negative views toward PWUD and those with substance use disorder (SUD) have been well-documented across populations (Douglass et al., 2023; Meyers et al., 2021; Yang et al., 2017) and drugs of misuse (Chen et al., 2022; Kulesza et al., 2015; Luoma et al., 2007; Yang et al., 2017). Such views, often characterized as "stigma" (Earnshaw, 2020; Yang et al., 2017), are associated with reduced access and engagement in care among PWUD (Brener et al., 2010; Brewer, 2006; Muncan et al., 2020; Stringer & Baker, 2018; van Olphen et al., 2009). Specifically, individuals who overdose are viewed as "to blame" for their overdose and "deserving of life-threatening outcomes as a natural consequence of their actions" (Winograd et al., 2020b). Related to deservingness, many first responders characterize people who overdose as "less deserving of care" than those who experience "legitimate" medical emergencies outside their own control (Farrugia et al., 2019). Regarding naloxone and overdose response, it is common among LEOs to endorse a limit on how often someone receives naloxone and to believe its availability

provides an excuse to continue drug use (Murphy & Russell, 2020).

Some first responders specifically endorse naloxone-related risk compensation – a belief that distributing naloxone leads to riskier drug use behaviors, such as using more drugs, using in riskier ways, or being less inclined to seek substance use treatment (Winograd et al., 2017, 2020b). Greater endorsement of naloxone-related risk compensation beliefs (NaRRC-B) (Winograd et al., 2020b) is associated with more negative attitudes toward people who experience opioid overdose. Prior studies found first responders hold high levels of stigma manifesting as risk compensation beliefs and naloxone hesitancy (Green et al., 2013; Kruis et al., 2022; Smiley-McDonald et al., 2022). First responders with negative perceptions of PWUD and overdose victims are more likely to be young, male, LEO (vs. EMS), and to have responded to a greater number of overdose calls than their peers holding more positive attitudes (Murphy & Russell, 2020; Winograd et al., 2020b). Research has also found poor management of officer burnout can exacerbate negative perceptions of drug use (Patch et al., 2023).

Role of standard overdose education and SUD training in improving negative attitudes and beliefs

Recent studies suggest attending basic Overdose Education and Naloxone Distribution (OEND) training sessions can improve attitudes and beliefs about PWUD and naloxone among LEO and EMS (C. H. (Gina) Dahlem et al., 2017; Nath et al., 2020; Phillips et al., 2024; Simmons et al., 2016; Winograd et al., 2020a, b). These findings emerged from our prior program, the MO-HOPE (Missouri Heroin/Opioid Prevention & Education) project, which included a 2.5 h OEND training with educational information about SUD and harm reduction, as well as hands-on portions to practice naloxone administration and rescue breathing. Following the training, participants reported significant reductions in NaRRC-B, as well as improved attitudes toward people who overdose (Winograd et al., 2020a, b). Such attitudinal improvements were largely maintained six months later (Phillips et al., 2024).

The current study

Given increased funding and attention for first responder-led interventions involving PWUD (Bagley et al., 2019; Champagne-Langabeer et al., 2020), we must identify the most critical training for improving negative beliefs about these interventions and populations. In a new project – the Connecting the DOTS (Drug Overdose Trust and Safety) Project – we sought to build on the foundation of MO-HOPE by partnering with the SHIELD (Safety & Health Integration in the Enforcement of Laws on Drugs) Training Initiative to develop an intervention incorporating three new components based on participant feedback, guidance from subject matter experts, and the emerging success of an occupational wellness approach to professional training (Beletsky et al., 2021; Cepeda et al., 2017; Mittal et al., 2016).

The first of these components was delivering training through a co-facilitation model, with one trainer being a peer first responder (paramedic for EMS, police officer for LEO audiences) alongside a working behavioral health specialist with lived experience of being revived from an overdose by a first responder. Co-facilitation was used to (i) model cross-sector collaboration, (ii) humanize addiction, overdose rescue, and SUD recovery, and (iii) offer insights to how PWUD experience interactions with first responders (SAMHSA, 2023). The second component was adding locally tailored, up-to-date information about the substance use resource landscape in the jurisdiction where the training took place, including ready-to-use instruction for placing service referrals to local treatment, recovery, or harm reduction programs. This ensured attendees left trainings with actionable steps to link an overdose survivor to care, given evidence that providing such instruction within criminal-legal contexts can significantly improve staff attitudes and willingness to do so (Friedmann et al., 2012). The third new component was framing the content through the lens of first responder occupational safety and wellness. This aimed to: (i) provide necessary mental health and wellness information to audiences often lacking in topical literacy (Drew & Martin, 2021), (ii) provide scientifically-accurate occupational safety and health information to remedy inaccurate risk perceptions that increase first responder stress and stigma toward PWUD (Beletsky et al., 2021), and (iii) engage trainees' sense of intrinsic interest to increase receptivity and uptake of the content (Simmons et al., 2022).

As such, this study aims to answer the following questions: (1) Do first responders' beliefs and attitudes toward PWUD and naloxone change following attendance of a locally tailored, occupational safety-focused harm reduction-oriented training co-led by a first responder and overdose survivor? (2) If yes, do training-associated changes differ by professional population? (LEO vs. EMS/Firefighters).

Methods

Community planning process

Prior to scheduling trainings, project staff designed and facilitated two community planning sessions in each target county/municipality. Planning sessions convened stakeholders from key sectors (emergency response, treatment, recovery, public health, harm reduction) to inform the training component covering local context and SUD resources, as well as help identify and enhance existing cross-sector collaborations.

Participants and procedure

Participants included professional first responders (LEO and EMS/firefighters) from across law enforcement, EMS and fire protection agencies across Missouri attending a profession-specific DOTS/SHIELD training. Training sessions were scheduled with individual agencies based on their availability and individuals registered for each session using an online portal. Our training team did not mandate full agency attendance, and departmental leadership varied regarding their specific registration protocols and attendance requirements. All registered attendees were provided a link to an online survey consent form, and consenting attendees completed baseline surveys immediately prior to the training ('pre-test') and immediately following ('post-test'). The surveys were delivered via the Qualtrics survey platform (www.qualtrics.com) and this study was approved by the University of Missouri, St. Louis Institutional Review Board.

Training curriculum

The curriculum developed by the SHIELD training team (www.shieldtraining.org) includes three core modules. The first, Responder Resilience, reviews first responder stress, burnout, trauma, and mental health resources specific to their profession. Module 2, Responder Safety, reviews bloodborne diseases, overdose recognition and naloxone administration (LEO only, as this content is covered in EMS professional training), and fentanyl contact safety concerns (i.e., addressing unfounded fears of passive dermal or airborne fentanyl exposure). This module also includes empathic communication strategies for all first responders (in particular, how best to interact with an overdose survivor in a compassionate and non-threatening manner) to be mindful of the fear and confusion experienced by those revived from overdose with naloxone. Module 3, Public Safety, reviews evidence-based treatments and local support services for people with SUD and how first responders may refer to them.

Content was customized to each audience and jurisdiction. Police trainers conducted demonstrations using nasal and intramuscular naloxone. Both first responder and behavioral health trainers shared their relevant personal experiences; responders discussed mental health help-seeking (asking for help, seeing a counselor); and behavioral health co-trainers spoke about their own overdose survival, recovery pathways, and interactions with first responders. Training sessions were approximately 2–3 h for EMS and LEO, respectively.

Measures

At both pre- and post-test, we measured attitudes toward people who overdose and naloxone-related risk compensation beliefs (see Appendix).

Modified opioid overdose attitudes scale (OOAS)

We used two items from Wagner et al.'s (2016) "Attitudes towards overdose victims" subscale (e.g., "People who overdose need to learn a lesson from it so they will not do it again") and three items from Winograd et al. (2020b) (e.g., "People who overdose need to be arrested") for a total of five items. Items were measured on a four-point Likert scale (Strongly disagree to Strongly agree). We computed a mean OOAS score, with higher scores reflecting more negative attitudes. The Cronbach's Alpha in this sample was 0.74 (see Winograd et al. (2020b) for additional psychometrics).

Naloxone-related risk compensation beliefs (NaRRC-B) scale

We measured naloxone-related risk compensation beliefs using four items from the NaRRC-B (Winograd et al., 2020b) (e.g., "Opioid/heroin users will use more opioids/heroin if they know they have access to naloxone") measured on the same four-point Likert scale as the OOAS. We computed mean NaRRC-B scores, with higher scores implying greater endorsement of risk compensation beliefs. The Cronbach's Alpha for the scale was 0.82.

Analytic approach

We used linear regression models to estimate the association of training with the outcome scores (OOAS and NaRRC-B), as well as the association with profession type (LEO or EMS/Firefighters). We developed a dummy variable for post-test, such that post-test observations were scored "1" and pre-test "0". We obtained estimates for the post-test variable to determine the average difference between pre and post-test scores, for the role of profession in baseline (pre-test) differences, and for the interaction term (post-test with profession) to determine how much LEO and EMS/firefighters differed in their training-related score changes. Additionally, given prior work found associations between first responder age or tenure and their attitudes toward PWUD or naloxone (e.g., Winograd et al. (2020a, b)), we accounted for tenure in current first responder careers as a covariate in both regression models. Analyses were conducted using R, version 4.2.1.

Results

Sample characteristics

There were 1,407 participants from 43 agencies within 36 (of 115) Missouri counties who attended 151 DOTS/SHIELD trainings between December 2020 and May 2023, and completed at least the pre- or post-training surveys, representing 76.1% of all trainees (N=1,849). The sub-sample of participants with matched pre- and post-test surveys was 71.3% (N=1,003) of those who completed a survey (or 54% of all attendees), and included 541 LEO (53.9%) and 462 EMS/firefighters

Table 1 Demographic characteristics

Characteristic	Overall (*N* = 1,003)	EMS/fire (*n* = 462)	LEO (*n* = 541)
Age [mean (SD)], years	36.31 (11.13)	36.20 (11.98)	36.41 (10.31)
Gender [*n* (%)]			
Men	817 (83%)	355 (78%)	462 (87%)
Other	9 (0.9%)	6 (1.3%)	3 (0.6%)
Women	163 (16%)	95 (21%)	68 (13%)
Race [*n* (%)]			
Black	82 (8.4%)	9 (2.0%)	73 (14%)
Multiracial	23 (2.3%)	11 (2.4%)	12 (2.3%)
Other	27 (2.8%)	14 (3.1%)	13 (2.5%)
White	848 (87%)	420 (93%)	428 (81%)
Ethnicity [*n* (%)]			
Hispanic	36 (3.7%)	17 (3.9%)	19 (3.6%)
Non-Hispanic	936 (96%)	424 (96%)	512 (96%)
Highest education completed [*n* (%)]			
Associate's degree	189 (19%)	101 (22%)	88 (17%)
Less than Associate's degree	446 (45%)	237 (52%)	209 (39%)
More than Associate's degree	349 (35%)	114 (25%)	235 (44%)
Years in current field [mean (SD)]	11.99 (11.08)	12.78 (11.58)	11.20 (10.51)

Note. LEO = law enforcement officers. SD = standard deviation

(46.1%). Most participants identified as White (87.0%), and men (83.0%), and the average age was 36.31 years (±11.13 years). Participants had been in their current field for an average of 11.99 years (±11.08 years; Table 1).

Descriptive mean scores

Respondents' overall mean OOAS score decreased from 2.43 (±0.58) at pre-test to 2.11 (±0.60) at post-test, indicating more positive attitudes post-training. The mean NaRRC-B score for all respondents was 2.20 (±0.49) at pre-test and decreased to 1.99 (±0.54), indicating less endorsement of NaRRC-B post-training. Regarding profession differences, the mean OOAS score for EMS/firefighters at pre-test (2.15 [±0.48]) was lower than the LEO pre-test OOAS score (2.24 [±0.49]), and the post-test EMS/firefighter score (1.93 [±0.56]) was lower than the LEO post-test score (2.04 [±0.51]). Similarly, for NaRRC-B, EMS/firefighters had a lower pre-test score (2.37 [±0.56]) than LEO (2.48 [±0.58]), and a lower post-test score (2.05 [±0.62]) than LEO (2.17 [±0.58]. See Table 2.

Regression results

The OOAS model was significant ($F(4, 1720) = 29.63$, $p << 0.01$), with an inverse association between post-test and OOAS score (B=-0.23; 95% CI: [-0.30, -0.16]), suggesting lower scores (improved attitudes) from pre- to post-test. There was also a positive association with profession type LEO, with $B = 0.13$ (95% CI: [0.06, 0.19]) compared to EMS/firefighter, indicating LEOs had more negative attitudes than EMS/firefighters. There was no interaction between profession type and post-test, suggesting no differential training-associated changes in attitudes between LEO and EMS/Fire.

The NaRRC-B model was also significant ($F(4, 1724) = 39.51$, $p < .01$), with the post-test estimate indicating reduced endorsement of these beliefs following the training (B=-0.32; 95% CI: [-0.40, -0.25]). For profession type, EMS/firefighters endorsed fewer risk compensation beliefs than LEO ($B = 0.13$; 95% CI: [0.05, 0.21]). There was no interaction between profession type and post-test, suggesting LEO and EMS/firefighters did not report differential training-associated changes in NaRRC-B endorsement.

Discussion

Among first responders, negative views toward people who overdose are problematic, as is the myth that naloxone access increases risky drug use behaviors. Our prior work educating first responders on substance use and harm reduction, with an in-depth focus on OEND, evidenced improvements in attitudes both toward people who overdose and naloxone, but did not include trainers who were in the same first responder profession nor those with lived experience surviving overdose events. The prior project also did not address the frequently asked question, "*And then what?*", about how to connect people to care following an overdose reversal. Early training from our team also failed to focus on responders' own occupational health and safety. To fill these gaps, the current study examined the application of the DOTS/SHIELD training – featuring curricula with less specific focus on the background of substance use, harm reduction, and OEND, and, instead, greater focus on available community resources and occupational safety, led by different types of trainers, in an effort to positively influence first responders' attitudes toward people who experience overdose and toward naloxone access. Though attitudes

Table 2 Outcome comparisons by timepoint and profession

Characteristic	Overall		EMS/fire		LEO	
	Pre-test (*N* = 1,003)	Post-test (*N* = 1,003)	Pre-test (*n* = 462)	Post-test (*n* = 462)	Pre-test (*n* = 541)	Post-test (*n* = 541)
NaRRC-B [mean (SD)]	2.43 (0.58)	2.11 (0.60)	2.37 (0.58)	2.05 (0.62)	2.48 (0.58)	2.17 (0.58)
OOAS [mean (SD)]	2.20 (0.49)	1.99 (0.54)	2.04 (0.51)	1.93 (0.56)	2.24 (0.49)	2.04 (0.51)

Note. LEO = law enforcement officers. NaRRC-B = Naloxone-related Risk Compensation Beliefs scale. OOAS = Opioid Overdose Attitudes Scale

and beliefs among LEO were more negative than among EMS/firefighters both prior to and following the training, attending the DOTS/SHIELD training was associated with improvements in those attitudes and beliefs among personnel from both sectors, indicating promise with this new approach.

Inclusion of a behavioral health specialist with lived experience of SUD and overdose

One of the drivers of improved attitudes toward PWUD is likely the inclusion of trainers who had experienced an overdose reversal by first responders. Having such individuals as trainers served to humanize those on the receiving end of responders' care and provided a rare glimpse of the positive downstream outcomes of their work. Indeed, exposure to personal narratives from PWUD is associated with more positive beliefs (Bandara et al., 2020; Jones et al., 2014) as it introduces an emotional element to the work not otherwise present and promotes an 'ethical consciousness' that runs counter to dominant discourse about drug use and overdose (Oliver & Cairney, 2019; Reynolds et al., 2020).

Providing tangible referral options, instructions, and connections

The second novel component of this training program was the county-level customization with local substance use resource access information. This customization heavily incorporates the Theory of Planned Behavior, which suggests attitudes are associated with behavioral intentions (Ajzen, 2012; Friedmann et al., 2012), and through equipping first responders with the mechanisms to improve survival outcomes, the training might improve their attitudes toward PWUD and naloxone.

Furthermore, connecting people to substance use services, particularly medications for opioid use disorder, can reduce future overdose events and in turn reduce the demand on first responders. Because "frequent response to the same person/residence" have been associated with compassion fatigue and negative perceptions of PWUD (Murphy & Russell, 2020; Phillips et al., 2024; Winstanley, 2020), creating an "offramp from addiction" for overdose survivors – such as post-overdose referral to treatment or pre-arrest diversion programs (e.g., Nyland et al., 2024 – could engender first responders' hope for better outcomes and more positive attitudes toward overdose survivors.

Incorporating SHIELD occupational safety components

Prior research suggests that among police, fears of occupational hazards like physical aggression or contracting illness are associated with negative attitudes toward naloxone and minimal naloxone adoption (Bandara et al., 2020; Gooley et al., 2022; Morales et al., 2018; SAMHSA, 2023). Specifically, concerns about needlestick injuries (Cepeda et al., 2017) and media-stoked fears about fentanyl exposure (Winograd et al., 2020a, b) shape responders' attitudes and behaviors during encounters with PWUD (Persaud & Jennings, 2020), and contribute to punitive approaches to drug use (e.g., syringe confiscation (Cepeda et al., 2017). The current study suggests interventions focusing on reducing fears around occupational injury may result in more positive interactions with PWUD. Officers who perceive less risk or threat of potential physical harm during encounters with PWUD may be more likely to use their discretion to issue referrals to service organizations rather than make arrests.

Comparing attitudes and beliefs across LEO and EMS/firefighters

Within the study sample, LEO participants reported more negative attitudes toward PWUD than EMS/firefighters, as well as stronger belief that naloxone access "enables" riskier drug use. This is consistent with prior documentation of pervasive LEO stigma surrounding drug use itself (Dahlem et al., 2023; Reichert et al., 2023b), undoubtedly linked to illicit drug use being a crime. A recent survey of Illinois officers showed a majority endorsed feelings of distrust, blame, and fear toward PWUD (Reichert et al., 2023b). This may be compounded by 'overdose recognition and response' being viewed as an additional and atypical law enforcement task (Hofer, 2022), thus increasing "role strain" and tense community relations among LEO (Zakimi et al., 2022). In contrast, among EMS, overdose events are medical emergencies for which immediate healthcare is necessary, falling squarely within their designated professional scope.

Unlike our earlier first responder OEND training efforts which evidenced a differential training effect (with EMS/firefighters reporting larger training-related improvements in attitudes and beliefs than LEO (Winograd et al., 2020b), the DOTS/SHIELD training yielded no interaction by profession. This could be a function of the prior training utilizing the same broad training curricula for both LEO and EMS/firefighters (which may have disproportionately benefited EMS/firefighters audiences), whereas the DOTS/SHIELD efforts not only included profession-specific customization, but also included profession-specific peer trainers. Utilizing peers to conduct continuing education training is a widely accepted cultural approach amongst LEO audiences (Paoline, 2003), and principles of adult learning theory suggest perceptions of instructors' subject-matter competency and inclusion of trainees' prior experiences as significant predictors of learner satisfaction (Collins, 2004; Howell & Buck, 2012).

Limitations and future directions

Several study limitations should be noted. First, we did not gather data on how responders' attitudes/beliefs are associated with their on-duty behaviors. Future research should capture self-reported or in-vivo data on first responder behaviors on scenes involving PWUD, using body-camera footage (White et al., 2022), to assess relationships between their drug-related perceptions and in-the-moment actions. Second, given this study was observational and not a randomized trial, we cannot conclusively state the training caused attitudinal shifts in attendees, only that these shifts were associated with training attendance. Relatedly, we did not directly compare the effects of the DOTS/SHIELD training program to those of the original MO-HOPE program, and therefore cannot state one program is more effective. Future efforts could randomize first responders to different training conditions to identify the most critical components facilitating changes in knowledge, attitudes, and beliefs. Last, this sample included primarily White and male Midwestern first responders, limiting generalizability to more demographically, geographically, and professionally diverse populations.

Conclusions

Our revamped training program to improve LEO and EMS/firefighters' interactions with PWUD incorporated three critical elements not otherwise collectively present in existing first responder training programs: (1) trainers who were first responders and people whose overdoses were reversed by first responders; (2) locally tailored substance use service resources and access instructions; and (3) occupational health content to make first responders' jobs easier and safer. This approach combines the value of personal narratives of drug use and recovery, behavioral intentions to connect people to care instead of arrest, and an effort to safeguard the physical and mental well-being of first responders to positively influence their views toward PWUD and naloxone. These findings suggest this training approach is feasible and effective on a large scale for law enforcement and EMS alike. Future efforts to train first responders on their role in our overdose crisis should include these components for optimal impact, both for first responders and the individuals they serve.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s40352-024-00309-1.

Appendix

Acknowledgements

The authors would like to acknowledge Brandon Park and Heather Poke for their valuable assistance with manuscript preparation and organization.

Author contributions

RPW: conceptualization; methodology; writing – original draft; writing – review and editing; supervision; project administration; funding acquisitionPLM: writing – original draft; writing – review and editingMMO: writing – original draft; writing – review and editingSS: formal analysis; data curation; investigation; writing – original draftEO: writing – original draft; project administrationALM: writing – original draft; project administrationJG: methodology; resources; writing – original draft; writing – review and editingLB: conceptualization; resources; writing – review and editing.

Funding

This work was supposed by the Substance Abuse and Mental Health Services Administration (SAMHSA), grant 1H79TI082515.

Data availability

Data is available upon request from the lead author (rachel.winograd@umsl.edu).

Declarations

Ethics approval

The study was approved exempt by the University of Missouri, St. Louis IRB as a training evaluation with minimal risk (#313750) in accordance with the Declaration of Helsinki.

Competing interests

The authors declare no competing interests.

Consent to participate

Every human participant provided informed consent.

Received: 24 September 2024 / Accepted: 2 December 2024
Published online: 19 December 2024

References

Ager, E., Purington, E., Purdy, M., Nickel, A., Baker, J., Smith, G., Hunt, N., & Losman, E. (2023). 100 first responder experiences with a novel leave-behind naloxone program: Results of a pilot qualitative survey. *Annals of Emergency Medicine*, *82*(4), S43. https://doi.org/10.1016/j.annemergmed.2023.08.120

Ajzen, I. (2012). The theory of planned behavior. *Handbook of theories of social psychology* (vol. 1; pp. 438–459). SAGE Publications Ltd. https://doi.org/10.4135/9781446249215

Ashburn, N. P., Ryder, C. W., Angi, R. M., Snavely, A. C., Nelson, R. D., Bozeman, W. P., McGinnis, H. D., Winslow, J. T., & Stopyra, J. P. (2020). One-year mortality and associated factors in patients receiving out-of-hospital naloxone for presumed opioid overdose. *Annals of Emergency Medicine*, *75*(5), 559–567. https://doi.org/10.1016/j.annemergmed.2019.11.022

Bagley, S. M., Schoenberger, S. F., Waye, K. M., & Walley, A. Y. (2019). A scoping review of post opioid-overdose interventions. *Preventive Medicine*, *128*, 105813. https://doi.org/10.1016/j.ypmed.2019.105813

Bailey, K., Paquet, S. R., Ray, B. R., Grommon, E., Lowder, E. M., & Sightes, E. (2018). Barriers and facilitators to implementing an urban co-responding police-mental health team. *Health & Justice*, *6*(1), 21. https://doi.org/10.1186/s40352-018-0079-0

Bailey, A., Harrington, C., & Evans, E. A. (2023). A scoping review of community-based post-opioid overdose intervention programs: Implications of program structure and outcomes. *Health & Justice*, *11*(1), 3. https://doi.org/10.1186/s40352-022-00201-w

Baker, P., Beletsky, L., Avalos, L., Venegas, C., Rivera, C., Strathdee, S. A., & Cepeda, J. (2020). Policing practices and risk of HIV infection among people who inject drugs. *Epidemiologic Reviews*, *42*(1), 27–40. https://doi.org/10.1093/epirev/mxaa010

Bandara, S. N., McGinty, E. E., & Barry, C. L. (2020). Message framing to reduce stigma and increase support for policies to improve the wellbeing of people with prior drug convictions. *International Journal of Drug Policy*, *76*, 102643. https://doi.org/10.1016/j.drugpo.2019.102643

Baumgart-McFarland, M., Chiarello, E., & Slay, T. (2022). Reluctant saviors: Professional ambivalence, cultural imaginaries, and deservingness construction in

naloxone provision. *Social Science & Medicine*, *309*, 115230. https://doi.org/10.1016/j.socscimed.2022.115230

Beletsky, L., Lozada, R., Gaines, T., Abramovitz, D., Staines, H., Vera, A., Rangel, G., Arredondo, J., & Strathdee, S. A. (2013). Syringe confiscation as an HIV risk factor: The public health implications of arbitrary policing in Tijuana and Ciudad Juarez, Mexico. *Journal of Urban Health*, *90*(2), 284–298. https://doi.org/10.1007/s11524-012-9741-3

Beletsky, L., Heller, D., Jenness, S. M., Neaigus, A., Gelpi-Acosta, C., & Hagan, H. (2014). Syringe access, syringe sharing, and police encounters among people who inject drugs in New York City: A community-level perspective. *International Journal of Drug Policy*, *25*(1), 105–111. https://doi.org/10.1016/j.drugpo.2013.06.005

Beletsky, L., Abramovitz, D., Baker, P., Arredondo, J., Rangel, G., Artamonova, I., Marotta, P., Mittal, M. L., Rocha-Jimenéz, T., Morales, M., Clairgue, E., Kang, S., Banuelos, A., Cepeda, J., Patterson, T. A., & Strathdee, S. A. (2021). Reducing police occupational needle stick injury risk following an interactive training: The SHIELD cohort study in Mexico. *British Medical Journal Open*, *11*(4), e041629. https://doi.org/10.1136/bmjopen-2020-041629

Bolster, J., Armour, R., O'Toole, M., Lysko, M., & Batt, A. M. (2023). The paramedic role in caring for people who use illicit and controlled drugs: A scoping review. *Paramedicine*, *20*(4), 117–127. https://doi.org/10.1177/27536386231171813

Brener, L., Von Hippel, W., Von Hippel, C., Resnick, I., & Treloar, C. (2010). Perceptions of discriminatory treatment by staff as predictors of drug treatment completion: Utility of a mixed methods approach. *Drug and Alcohol Review*, *29*(5), 491–497. https://doi.org/10.1111/j.1465-3362.2010.00173.x

Brewer, M. K. (2006). The contextual factors that foster and hinder the process of recovery for alcohol dependent women. *Journal of Addictions Nursing*, *17*(3), 175–180.

Buchheit, B. M., Crable, E. L., Lipson, S. K., Drainoni, M. L., & Walley, A. Y. (2021). Opening the door to somebody who has a chance. – the experiences and perceptions of public safety personnel towards a public restroom overdose prevention alarm system. *International Journal of Drug Policy*, *88*, 103038. https://doi.org/10.1016/j.drugpo.2020.103038

Centers for Disease Control and Prevention (2023a, May 18). *Provisional data shows U.S. drug overdose deaths top 100,000 in 2022*. https://blogs.cdc.gov/nchs/2023/05/18/7365/

Centers for Disease Control and Prevention (2023b, July 26). *Drug overdose deaths*. https://www.cdc.gov/nchs/hus/topics/drug-overdose-deaths.htm

Cepeda, J. A., Beletsky, L., Sawyer, A., Serio-Chapman, C., Smelyanskaya, M., Han, J., Robinowitz, N., & Sherman, S. G. (2017). Occupational safety in the age of the opioid crisis: Needle stick injury among Baltimore police. *Journal of Urban Health*, *94*(1), 100–103. https://doi.org/10.1007/s11524-016-0115-0

Champagne-Langabeer, T., Bakos-Block, C., Yatsco, A., & Langabeer, J. R. (2020). Emergency medical services targeting opioid user disorder: An exploration of current out-of-hospital post-overdose interventions. *Journal of the American College of Emergency Physicians Open*, *1*(6), 1230–1239. https://doi.org/10.1002/emp2.12208

Chen, A. T., Johnny, S., & Conway, M. (2022). Examining stigma relating to substance use and contextual factors in social media discussions. *Drug and Alcohol Dependence Reports*, *3*, 100061. https://doi.org/10.1016/j.dadr.2022.100061

Collins, J. (2004). Education techniques for lifelong learning. *RadioGraphics*, *24*(5), 1483–1489. https://doi.org/10.1148/rg.245045020

Curry, J., Sloan, L., Rush, W. K., & Gulrajani, C. (2023). The changing landscape of mental health crisis response in the United States. *Journal of the American Academy of Psychiatry and the Law Online*, *51*(1), 6–12. https://doi.org/10.29158/JAAPL.220111-22

Dahlem, C. H., King, L., Anderson, G., Marr, A., Waddell, J. E., Scalera, M., & Gina. (2017). Beyond rescue: Implementation and evaluation of revised naloxone training for law enforcement officers. *Public Health Nursing*, *34*(6), 516–521. https://doi.org/10.1111/phn.12365

Dahlem, C. H., Patil, R., Khadr, L., Ploutz-Snyder, R. J., Boyd, C. J., & Shuman, C. J. (2023). Effectiveness of take ACTION online naloxone training for law enforcement officers. *Health & Justice*, *11*(1), 47. https://doi.org/10.1186/s40352-023-00250-9

del Pozo, B., Sightes, E., Goulka, J., Ray, B., Wood, C. A., Siddiqui, S., & Beletsky, L. A. (2021). Police discretion in encounters with people who use drugs: Operationalizing the theory of planned behavior. *Harm Reduction Journal*, *18*, 132. https://doi.org/10.1186/s12954-021-00583-4

Deonarine, A., Amlani, A., Ambrose, G., & Buxton, J. A. (2016). Qualitative assessment of take-home naloxone program participant and law enforcement interactions in British Columbia. *Harm Reduction Journal*, *13*(1), 17. https://doi.org/10.1186/s12954-016-0106-1

Doe-Simkins, M., El-Sabawi, T., & Carroll, J. J. (2022). Whose concerns? It's time to adjust the lens of research on police-involved overdose response. *American Journal of Public Health*, *112*(9), 1239–1241. https://doi.org/10.2105/AJPH.2022.306988

Douglass, C. H., Win, T. M., Goutzamanis, S., Lim, M. S. C., Block, K., Onsando, G., Hellard, M., Higgs, P., Livingstone, C., & Horyniak, D. (2023). Stigma associated with alcohol and other drug use among people from migrant and ethnic minority groups: Results from a systematic review of qualitative studies. *Journal of Immigrant and Minority Health*, *25*(6), 1402–1425. https://doi.org/10.1007/s10903-023-01468-3

Drew, J. M., & Martin, S. (2021). A national study of police mental health in the USA: Stigma, mental health and help-seeking behaviors. *Journal of Police and Criminal Psychology*, *36*(2), 295–306. https://doi.org/10.1007/s11896-020-09424-9

Drug Policy Alliance (2024, March 1). *Oregon set to recriminalize drugs, return to failed approach of arresting, jailing people for possession*. Drug Policy Alliance. https://drugpolicy.org/news/oregon-set-to-recriminalize-drugs-return-to-failed-approach-of-arresting-jailing-people-for-possession/

Earnshaw, V. A. (2020). Stigma and substance use disorders: A clinical, research, and advocacy agenda. *American Psychologist*, *75*(9), 1300–1311. https://doi.org/10.1037/amp0000744

Farrugia, A., Fraser, S., Dwyer, R., Fomiatti, R., Neale, J., Dietze, P., & Strang, J. (2019). Take-home naloxone and the politics of care. *Sociology of Health & Illness*, *41*(2), 427–443. https://doi.org/10.1111/1467-9566.12848

Footer, K. H. A., Urquhart, G. J., Silberzahn, B., Rouhani, S., Weicker, N. P., Owczarzak, J., Park, J. N., Morris, M., & Sherman, S. G. (2023). PWUD experiences of criminal justice reform: Enduring tensions between policing and harm reduction in Baltimore, MD. *Contemporary Drug Problems*, *50*(2), 176–189. https://doi.org/10.1177/00914509221136913

Formica, S. W., Waye, K. M., Benintendi, A. O., Yan, S., Bagley, S. M., Beletsky, L., Carroll, J. J., Xuan, Z., Rosenbloom, D., Apsler, R., Green, T. C., Hunter, A., & Walley, A. Y. (2021). Characteristics of post-overdose public health-public safety outreach in Massachusetts. *Drug and Alcohol Dependence*, *219*, 108499. https://doi.org/10.1016/j.drugalcdep.2020.108499

Friedman, J., Syvertsen, J. L., Bourgois, P., Bui, A., Beletsky, L., & Pollini, R. (2021). Intersectional structural vulnerability to abusive policing among people who inject drugs: A mixed methods assessment in California's central valley. *International Journal of Drug Policy*, *87*, 102981. https://doi.org/10.1016/j.drugpo.2020.102981

Friedmann, P. D., Hoskinson, R., Gordon, M., Schwartz, R., Kinlock, T., Knight, K., Flynn, P. M., Welsh, W. N., Stein, L. A. R., Sacks, S., O'Connell, D. J., Knudsen, H. K., Shafer, M. S., Hall, E., & Frisman, L. K. (2012). Medication-assisted treatment in criminal justice agencies affiliated with the Criminal Justice-Drug Abuse Treatment Studies (CJ-DATS): Availability, barriers, and intentions. *Substance Abuse*, *33*(1), 9–18. https://doi.org/10.1080/08897077.2011.611460

Friedmann, P. D., Ducharme, L. J., Welsh, W., Frisman, L., Knight, K., Kinlock, T., Mitchell, S. G., Hall, E., Urbine, T., Gordon, M., Abdel-Salam, S., O'Connell, D., Albizu-Garcia, C., Knudsen, H., Duval, J., & Fenster, J. (2013). A cluster randomized trial of an organizational linkage intervention for offenders with substance use disorders: Study protocol. *Health & Justice*, *1*(6). https://doi.org/10.1186/2194-7899-1-6. Article 6.

Gooley, B., Weston, B., Colella, M. R., & Farkas, A. (2022). Outcomes of law enforcement officer administered naloxone. *The American Journal of Emergency Medicine*, *62*, 25–29. https://doi.org/10.1016/j.ajem.2022.09.041

Green, T. C., Zaller, N., Palacios, W. R., Bowman, S. E., Ray, M., Heimer, R., & Case, P. (2013). Law enforcement attitudes toward overdose prevention and response. *Drug and Alcohol Dependence*, *133*(2), 677–684. https://doi.org/10.1016/j.drugalcdep.2013.08.018

Hofer, M. S. (2022). The light at the end of the tunnel has been permanently shut off: Work-role overload among U.S. police. *Criminal Justice and Behavior*, *49*(7), 1070–1089. https://doi.org/10.1177/00938548211024706

Howell, G. F., & Buck, J. M. (2012). The adult student and course satisfaction: What matters most? *Innovative Higher Education*, *37*(3), 215–226. https://doi.org/10.1007/s10755-011-9201-0

Jones, M. D., McBeth, M. K., & Shanahan, E. A. (2014). Introducing the narrative policy framework. In M. D. Jones, E. A. Shanahan, & M. K. McBeth (Eds.), *The science of stories: Applications of the narrative policy framework in public policy analysis* (pp. 1–25). Palgrave Macmillan US. https://doi.org/10.1057/9781137485861_1

Kruis, N. E., McLean, K., Perry, P., & Nackley, M. K. (2022). First responders' views of naloxone: Does stigma matter? *Substance Use & Misuse*, *57*(10), 1534–1544. https://doi.org/10.1080/10826084.2022.2092150

Kulesza, M., Larimer, M. E., & Rao, D. (2015). Substance use related stigma: What we know and the way forward. *Addictive Behaviors, Therapy & Rehabilitation*, *2013*. https://doi.org/10.4172/2324-9005.1000106

Lloyd, D., Rowe, K., Leung, S. Y. J., Pourtaher, E., & Gelberg, K. (2023). It's just another tool on my toolbelt: New York state law enforcement officer experiences administering naloxone. *Harm Reduction Journal*, *20*(1), 29. https://doi.org/10.1186/s12954-023-00748-3

Lopez, G. (2016, March 15). *Poll: The only drug Americans want to legalize is marijuana*. Vox. https://www.vox.com/2016/3/15/11224500/marijuana-legalization-war-on-drugs-poll

Luoma, J. B., Twohig, M. P., Waltz, T., Hayes, S. C., Roget, N., Padilla, M., & Fisher, G. (2007). An investigation of stigma in individuals receiving treatment for substance abuse. *Addictive Behaviors*, *32*(7), 1331–1346. https://doi.org/10.1016/j.addbeh.2006.09.008

McCarthy, S., Chinman, M., Mitchell-Miland, C., Schutt, R. K., Zickmund, S., & Ellison, M. L. (2019). Peer specialists: Exploring the influence of program structure on their emerging role. *Psychological Services*, *16*(3), 445–455. https://doi.org/10.1037/ser0000250

Meyers, S. A., Earnshaw, V. A., D'Ambrosio, B., Courchesne, N., Werb, D., & Smith, L. R. (2021). The intersection of gender and drug use-related stigma: A mixed methods systematic review and synthesis of the literature. *Drug and Alcohol Dependence*, *223*, 108706. https://doi.org/10.1016/j.drugalcdep.2021.108706

Mittal, M. L., Beletsky, L., Patiño, E., Abramovitz, D., Rocha, T., Arredondo, J., Bañuelos, A., Rangel, G., & Strathdee, S. A. (2016). Prevalence and correlates of needlestick injuries among active duty police officers in Tijuana, Mexico. *Journal of the International AIDS Society*, *19*(4S3), 20874. https://doi.org/10.7448/IAS.19.4.20874

Morales, M., Rafful, C., Gaines, T. L., Cepeda, J. A., Abramovitz, D., Artamonova, I., Baker, P., Clairgue, E., Mittal, M. L., Rocha-Jimenez, T., Arredondo, J., Kerr, T., Bañuelos, A., Strathdee, S. A., & Beletsky, L. (2018). Factors associated with extrajudicial arrest for syringe possession: Results of a department-wide survey of municipal police in Tijuana, Mexico. *BMC International Health and Human Rights*, *18*(1), 36. https://doi.org/10.1186/s12914-018-0175-1

Muncan, B., Walters, S. M., Ezell, J., & Ompad, D. C. (2020). They look at us like junkies: Influences of drug use stigma on the healthcare engagement of people who inject drugs in New York City. *Harm Reduction Journal*, *17*(1), 53. https://doi.org/10.1186/s12954-020-00399-8

Murphy, J., & Russell, B. (2020). Police officers' views of naloxone and drug treatment: Does greater overdose response lead to more negativity? *Journal of Drug Issues*, *50*(4), 455–471. https://doi.org/10.1177/0022042620921363

Nath, J. M., Scharf, B., Stolbach, A., Tang, N., Jenkins, J. L., Margolis, A., Levy, M. J., Nath, J. M., Scharf, B., Stolbach, A., Tang, N., Jenkins, J. L., Margolis, A., & Levy, M. J. (2020). A longitudinal analysis of a law enforcement intranasal naloxone training program. *Cureus*, *12*. https://doi.org/10.7759/cureus.11312

Nyland, J. E., Zhang, A., Balles, J. A., Nguyen, T. H., White, V., Albert, L. A., ... & Zgierska, A. E. (2024). Law enforcement-led, pre-arrest diversion-to-treatment may reduce crime recidivism, incarceration, and overdose deaths: Program evaluation outcomes. *Journal of Substance Use and Addiction Treatment*, *165*, 209458

Oliver, K., & Cairney, P. (2024). (2019). The dos and don'ts of influencing policy: A systematic review of advice to academics. *Palgrave Communications*, *5*(1), 1–11. https://doi.org/10.1057/s41599-019-0232-y

Ondocsin, J., Mars, S. G., Howe, M., & Ciccarone, D. (2020). Hostility, compassion and role reversal in West Virginia's long opioid overdose emergency. *Harm Reduction Journal*, *17*(1), 74. https://doi.org/10.1186/s12954-020-00416-w

Ostrach, B., Hixon, V., & Bryce, A. (2024). When people who use drugs can't differentiate between medical care and cops, it's a problem. Compounding risks of law enforcement harassment & punitive healthcare policies. *Health & Justice*, *12*(1), 3. https://doi.org/10.1186/s40352-023-00256-3

Paoline, E. A. (2003). Taking stock: Toward a richer understanding of police culture. *Journal of Criminal Justice*, *31*(3), 199–214. https://doi.org/10.1016/S0047-2352(03)00002-3

Patch, K., Huang, C., Hendriks, S., Wasserman, D., Parrish, M., & Grady, C. (2023). It's pretty sad if you get used to it: A qualitative study of first responder experiences with opioid overdose emergencies. *Prehospital Emergency Care*, *0*(0), 1–8. https://doi.org/10.1080/10903127.2023.2236200

Persaud, E., & Jennings, C. R. (2020). Pilot study on risk perceptions and knowledge of fentanyl exposure among New York State first responders. *Disaster Medicine and Public Health Preparedness*, *14*(4), 437–441. https://doi.org/10.1017/dmp.2019.95

Phillips, S., Budesa, Z., Smith, R., Wood, C., & Winograd, R. (2024). Longitudinal assessment of emergency responders' attitudes toward people who overdose and naloxone following an overdose education training. *Substance Use & Addiction Journal*, 29767342241241401. https://doi.org/10.1177/29767342241241401

Qualtrics (2024, November 19). *Qualtrics XM - experience management software*. https://www.qualtrics.com/

Ray, B., Hedden, B. J., Carroll, J. J., del Pozo, B., Wagner, K., Kral, A. H., O'Donnell, D., Victor, G., & Huynh, P. (2022). Prevalence and correlates of incarceration following emergency medical services response to overdose. *Drug and Alcohol Dependence*, *238*, 109571. https://doi.org/10.1016/j.drugalcdep.2022.109571

Reichert, J., & Gleicher, L. (2019). Probation clients' barriers to access and use of opioid use disorder medications. *Health & Justice*, *7*(1), 10. https://doi.org/10.1186/s40352-019-0089-6

Reichert, J., Adams, S., Taylor, J., & del Pozo, B. (2023a). Guiding officers to deflect citizens to treatment: An examination of police department policies in Illinois. *Health & Justice*, *11*(1), 7. https://doi.org/10.1186/s40352-023-00207-y

Reichert, J., del Pozo, B., & Taylor, B. (2023b). Police stigma toward people with opioid use disorder: A study of Illinois officers. *Substance Use & Misuse*, *58*(12), 1493–1504. https://doi.org/10.1080/10826084.2023.2227698

Reynolds, J. P., Stautz, K., Pilling, M., van der Linden, S., & Marteau, T. M. (2020). Communicating the effectiveness and ineffectiveness of government policies and their impact on public support: A systematic review with meta-analysis. *Royal Society Open Science*, *7*(1), 190522. https://doi.org/10.1098/rsos.190522

Richardson, N. J., Ray, B., Smiley-McDonald, H. M., Davis, C. S., & Kral, A. H. (2023). National survey findings on law enforcement agency drug response practices, overdose victim outcomes, and good samaritan laws. *Drug and Alcohol Dependence*, *248*, 109916. https://doi.org/10.1016/j.drugalcdep.2023.109916

Selfridge, M., Greer, A., Card, K. G., Macdonald, S., & Pauly, B. (2020). It's like super structural – overdose experiences of youth who use drugs and police in three non-metropolitan cities across British Columbia. *International Journal of Drug Policy*, *76*, 102623. https://doi.org/10.1016/j.drugpo.2019.102623

Siddiqui, S. T., La Manna, A., Connors, E., Smith, R., Vance, K., Budesa, Z., Goulka, J., Beletsky, L., Wood, C. A., Marotta, P., & Winograd, R. P. (2024). An evaluation of first responders' intention to refer to post-overdose services following SHIELD training. *Harm Reduction Journal*, *21*(1), 39. https://doi.org/10.1186/s12954-024-00957-4

Simmons, J., Rajan, S., Goldsamt, L., & Elliott, L. (2016). Implementation of online opioid overdose prevention, recognition and response trainings for professional first responders: Year 1 survey results. *Drug and Alcohol Dependence*, *169*, 1–4. https://doi.org/10.1016/J.DRUGALCDEP.2016.10.003

Simmons, J., Elliott, L., Bennett, A. S., Beletsky, L., Rajan, S., Anders, B., & Dastparvardeh, N. (2022). Evaluation of an experimental web-based educational module on opioid-related occupational safety among police officers: Protocol for a randomized pragmatic trial to minimize barriers to overdose response. *JMIR Research Protocols*, *11*(2), e33451. https://doi.org/10.2196/33451

Smiley-McDonald, H. M., Attaway, P. R., Richardson, N. J., Davidson, P. J., & Kral, A. H. (2022). Perspectives from law enforcement officers who respond to overdose calls for service and administer naloxone. *Health & Justice*, *10*(1), 9. https://doi.org/10.1186/s40352-022-00172-y

Stringer, K. L., & Baker, E. H. (2018). Stigma as a barrier to substance abuse treatment among those with unmet need: An analysis of parenthood and marital status. *Journal of Family Issues*, *39*(1), 3–27. https://doi.org/10.1177/0192513X15581659

Substance Abuse and Mental Health Services Administration (2023). *Connecting communities to substance use services: Practical approaches for first responders* (PEP23-06-01–010). https://store.samhsa.gov/sites/default/files/pep23-06-01-010.pdf

The Council of Statement Governments Justice Center (2019). *Police-mental health collaborations: A framework for implementing effective law enforcement responses for people who have mental health needs*. https://csgjusticecenter.org/publications/police-mental-health-collaborations-a-framework-for-implementing-effective-law-enforcement-responses-for-people-who-have-mental-health-needs/

Uding, C. V., Moon, H. R., & Lum, C. (2024). The status of co-responders in law enforcement: Findings from a national survey of law enforcement agencies. *Policing: An International Journal*, *Vol. ahead-of-print*(No. ahead-of-print). https://doi.org/10.1108/PIJPSM-04-2024-0062

van Olphen, J., Eliason, M. J., Freudenberg, N., & Barnes, M. (2009). Nowhere to go: How stigma limits the options of female drug users after release from jail. *Substance Abuse Treatment Prevention and Policy*, *4*(1), 10. https://doi.org/10.1186/1747-597X-4-10

Volkow, N. D., Gordon, J. A., & Koob, G. F. (2021). Choosing appropriate language to reduce the stigma around mental illness and substance use disorders. *Neuropsychopharmacology : Official Publication of the American College of*

Neuropsychopharmacology, *46*(13), 2230–2232. https://doi.org/10.1038/s41386-021-01069-4

Wagner, K. D., Bovet, L. J., Haynes, B., Joshua, A., & Davidson, P. J. (2016). Training law enforcement to respond to opioid overdose with naloxone: Impact on knowledge, attitudes, and interactions with community members. *Drug and Alcohol Dependence*, *165*, 22–28. https://doi.org/10.1016/J.DRUGALCDEP.2016.05.008

White, M. D., Perrone, D., Malm, A., & Watts, S. (2021). Narcan cops: Officer perceptions of opioid use and willingness to carry naloxone. *Journal of Criminal Justice*, *72*, 101778. https://doi.org/10.1016/j.jcrimjus.2020.101778

White, M. D., Watts, S., Orosco, C., Perrone, D., & Malm, A. (2022). Leveraging body-worn camera footage to better understand opioid overdoses and the impact of police-administered naloxone. *American Journal of Public Health*, *112*(9), 1326–1332. https://doi.org/10.2105/AJPH.2022.306918

Winograd, R. P., Davis, C. S., Niculete, M., Oliva, E., & Martielli, R. P. (2017). Medical providers' knowledge and concerns about opioid overdose education and take-home naloxone rescue kits within Veterans affairs health care medical treatment settings. *Substance Abuse*, *38*(2), 135–140. https://doi.org/10.1080/08897077.2017.1303424

Winograd, R. P., Stringfellow, E. J., Phillips, S. K., & Wood, C. A. (2020a). Some law enforcement officers' negative attitudes toward overdose victims are exacerbated following overdose education training. *The American Journal of Drug and Alcohol Abuse*, *46*(5), 577–588. https://doi.org/10.1080/00952990.2020.1793159

Winograd, R. P., Werner, K. B., Green, L., Phillips, S., Armbruster, J., & Paul, R. (2020b). Concerns that an opioid antidote could make things worse: Profiles of risk compensation beliefs using the Naloxone-related risk compensation beliefs (NaRRC-B) scale. *Substance Abuse*, *41*(2), 245–251. https://doi.org/10.1080/08897077.2019.1616348

Winograd, R. P., Phillips, S., Wood, C. A., Green, L., Costerison, B., Goulka, J., & Beletsky, L. (2020c). Training to reduce emergency responders' perceived overdose risk from contact with fentanyl: Early evidence of success. *Harm Reduction Journal*, *17*, 1–5.

Winstanley, E. L. (2020). The bell tolls for thee & thine: Compassion fatigue & the overdose epidemic. *International Journal of Drug Policy*, *85*, 102796. https://doi.org/10.1016/j.drugpo.2020.102796

Worthington, N., Gilliam, T., Mital, S., & Caslin, S. (2022). First responder assertive linkage programs: A scoping review of interventions to improve linkage to care for people who use drugs. *Journal of Public Health Management and Practice*, *28*(Supplement 6), S302. https://doi.org/10.1097/PHH.0000000000001611

Xavier, J., Greer, A., Crabtree, A., & Buxton, J. A. (2023). Police officers' perceptions of their role at overdose events: A qualitative study. *Drugs: Education Prevention and Policy*, *30*(4), 361–372. https://doi.org/10.1080/09687637.2022.2070057

Yang, L., Wong, L. Y., Grivel, M. M., & Hasin, D. S. (2017). Stigma and substance use disorders: An international phenomenon. *Current Opinion in Psychiatry*, *30*(5), 378–388. https://doi.org/10.1097/YCO.0000000000000351

Zakimi, N., Greer, A., & Butler, A. (2022). Too many hats? The role of police officers in drug enforcement and the community. *Policing: A Journal of Policy and Practice*, *16*(4), 615–629. https://doi.org/10.1093/police/paab082

Publisher's note