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Research paper

Evaluation of an overdose prevention and response training programme for injection drug users in the Skid Row area of Los Angeles, CA

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ABSTRACT

Background: Fatal opioid overdose is a significant cause of mortality among injection drug users (IDUs).
Methods: We evaluated an overdose prevention and response training programme for IDUs run by a community-based organisation in Los Angeles, CA. During a 1-h training session participants learned skills to prevent, recognise, and respond to opioid overdoses, including: calling for emergency services, performing rescue breathing, and administering an intramuscular injection of naloxone (an opioid antagonist). Between September 2006 and January 2008, 93 IDUs were trained. Of those, 66 (71%) enrolled in the evaluation study and 47 participants (71%) completed an interview at baseline and 3-month follow-up.
Results: Twenty-one percent of participants were female, 42% were white, 29% African American, and 18% Latino. Most were homeless or lived in temporary accommodation (73%). We found significant increases in knowledge about overdose, in particular about the use of naloxone. Twenty-two participants responded to 35 overdoses during the follow-up period. Twenty-six overdose victims recovered, four died, and the outcome of five cases was unknown. Response techniques included: staying with the victim (85%), administering naloxone (80%), providing rescue breathing (66%), and calling emergency services (60%). The average number of appropriate response techniques used by participants increased significantly from baseline to follow-up ($p < 0.05$). Half (53%) of programme participants reported decreased drug use at follow-up.
Conclusion: Overdose prevention and response training programmes may be associated with improved overdose response behaviour, with few adverse consequences and some unforeseen benefits, such as reductions in personal drug use.

Introduction

Fatal opioid overdose is a significant cause of premature mortality. The U.S. Centers for Disease Control and Prevention reported that in 2005, 33,541 persons died of drug-induced causes in the United States (Kung, Hoyert, Xu, & Murphy, 2008). In 2003, opioids were responsible for more drug-related deaths than any other drug as reported by the U.S. Drug Abuse Warning Network (DAWN) (SAMHSA Office of Applied Studies, 2005). Heroin or metabolites specific to heroin were reported in over a third of opioid-related overdose deaths, though prescription opioids such as methadone, hydrocodone, and oxycodone, also contributed significantly (SAMHSA Office of Applied Studies, 2005; Zacny et al., 2003).

Intravenous administration of opioids significantly elevates the risk of overdose (Sporer, 1999). Studies among IDUs in the U.S. and elsewhere have found rates of witnessed drug overdose ranging from 54% to 92% (Galea et al., 2006; Pollini et al., 2006; Seal et al., 2003; Strang et al., 1999), and rates of non-fatal overdoses experienced by IDUs ranging from 40% to 68% (Galea et al., 2006; Kerr et al., 2007; Pollini et al., 2006; Strang et al., 1999). Opioid overdose results in mortality by depressing respiration in the overdose victim, ultimately leading to hypoxia and death (White & Irvine, 1999). However, as this can takes between 1 and 3 h, there is time for medical intervention (Sporer, 1999).

IDUs have demonstrated a willingness to be trained to respond to opioid overdoses among their peers (Seal et al., 2003; Strang et al., 1999; Strang, Best, Man, Noble, & Gossop, 2000), and preliminary evaluations suggest training programmes can increase knowledge and response skills, potentially saving lives (Green, Heimer, & Grau, 2008). Training programmes have been implemented in the U.S. in New York (Galea et al., 2006; Piper et al., 2007), Chicago (Maxwell,

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Bigg, Stanczykiewicz, & Carlberg-Racich, 2006), New Mexico (New Mexico Department of Health, 2008), Baltimore (Tobin, Sherman, Beilenson, Welsh, & Latkin, 2008), and San Francisco (Seal et al., 2005). These programmes include training in the recognition of opioid overdose and appropriate response techniques, including rescue breathing and the administration of naloxone, an opioid antagonist routinely used in clinical and pre-clinical settings to reverse potentially fatal opioid overdoses (Baca & Grant, 2005; Julien, 2005). Some side effects associated with naloxone administration have been reported, but these are relatively rare (Sporer, 1999, 2003) and have been debated (Hsu, Rao, & Nelson, 1997). Naloxone has no psychoactive properties or pharmacologic activity in the absence of opioids. In the U.S., naloxone is available by prescription only (Burris, Norland, & Edlin, 2001).

Homelessness is associated with an elevated risk of overdose among IDUs (Kerr et al., 2007). The Skid Row area of Los Angeles, CA has the highest concentration of homeless persons in the city (over 5000 individuals on any given night), 30% of whom report drug use (Los Angeles Homeless Services Authority, 2007). While drug overdose was the sixth leading cause of premature death in all of Los Angeles County, it was the fourth leading cause in the area where Skid Row is located (Los Angeles County Department of Public Health, 2006). Homeless individuals face additional challenges in storing prescription medications such as naloxone, making those living on the streets at increased risk of fatal opioid overdose. Here we report on the evaluation of an overdose prevention and response training programme, implemented in September of 2006 for IDUs in the Skid Row area of Los Angeles.

Methods

The Homeless Health Care Los Angeles Center for Harm Reduction (HHCLA-HRC) is a community-based organisation that provides services to IDUs including syringe exchange, medical care and referrals to drug detoxification programmes. Criteria for attending the HHCLA-HRC are (1) being a current IDU, and (2) being at least 18 years old. Clients are not required to be resident in the Skid Row area, but most live, attend services, and buy and/or use drugs in the area. In September 2006, HHCLA-HRC staff offered an overdose prevention and response training programme to all clients. Participants were recruited via street outreach, distribution of advertising leaflets, and one-on-one recruitment within the HRC.

The overdose prevention and response training programme

Training sessions were conducted individually or in small groups (two to six people) by two trainers. Both were educated in overdose prevention and response training through local overdose prevention efforts and a "Train the Trainer" seminar conducted by the Harm Reduction Coalition. Training sessions were offered 4 days a week, depending on staff availability, on a drop-in basis. The 1-h session covered: (1) mechanisms of opioid overdose, (2) strategies for the prevention of opioid overdose, (3) recognition of opioid overdose, and (4) recommended response techniques. The full curriculum is available from the authors. Appropriate response techniques followed the S.C.A.R.E. M.E. strategy developed by the Chicago Recovery Alliance (www.anypositivechange.org): Stimulation, Call for help, check Airway, Rescue breathing, Evaluation, Muscular injection of naloxone, Evaluation and support (including staying with the victim until medical help arrives and placing the victim in the recovery position).

The trainers presented the information using slides and discussion was encouraged throughout. A hands-on demonstration and practice session followed the presentation. Participants were encouraged to discuss what they had learned with friends, family, or using buddies, and the trainers suggested that they also send those individuals in to be trained, however, no educational tools were provided for the purpose of training others.

Upon demonstrating knowledge and skills in the four topic areas, each participant met one-on-one with the programme physician, who documented the encounter and provided two doses of naloxone in 1 ml (4 mg/ml naloxone), pre-filled, single-dose syringes. A prescription label affixed to the box was dated and signed by the physician. Participants also received a kit containing latex gloves, alcohol swabs, a rescue breathing mask, and a small card describing the response technique. There was no limit on the number of doses that participants could receive, nor on the number of times they could return for refills.

The evaluation study

Study recruitment was conducted from September 2006 to January 2008. All participants were asked to participate in the evaluation study, although participation in the training was not contingent upon study enrolment. The University of Southern California Institutional Review Board approved study procedures. The study aimed to assess whether training participants: (1) increased their knowledge about naloxone and overdose risks/symptoms, (2) improved their attitudes to overdose response and the summoning of emergency assistance, (3) increased the frequency with which they engaged in recommended overdose response techniques, and (4) decreased the frequency with which they engaged in non-recommended overdose response techniques.

Those who agreed to enroll in the study provided written informed consent and completed a short baseline interview. Participants returned 3 months later to complete a follow-up interview. When possible, participants were contacted via email, phone, and/or letter to remind them of their follow-up visit. The Los Angeles County Sheriff's inmate locater database, which is publicly available via the Internet, was checked when a participant did not return for follow-up interview. If participants were incarcerated at time of interview and for the majority of the 1-month period thereafter, they were considered "unavailable".

Those who returned to obtain a refill of naloxone during the follow-up period completed an incident report documenting the circumstances necessitating the refill, including loss, theft, confiscation, or use. If the naloxone was used to respond to an overdose, detailed information was collected about the incident. Participants received a $5 food voucher for completing the baseline assessment, and $20 and a $5 food voucher for completing the follow-up assessment.

Measures

Trained interviewers administered the surveys in private offices at the HHCLA-HRC. Demographic information including age, ethnicity, housing status, drug use behaviour, and enrollment in drug treatment were collected at baseline and 3-month follow-up. There was also a series of questions about most recent overdose experienced and witnessed in the past 3 months, including about the signs of overdose, techniques used to respond, outcome (i.e., survived or not), and negative consequences associated with the overdose. Knowledge was assessed at both baseline and 3-month follow-up using six questions, similar to those used in other evaluations (Tobin et al., 2008). These asked about risk factors for overdose, symptoms used to recognise overdose, and appropriate use of naloxone (Table 2). Attitudes towards responding to overdoses (i.e., likelihood of administering naloxone, calling emergency services, and teaching someone else to respond to an overdose) were assessed on a five-point Likert-type scale with response choices ranging from "definitely not likely" to "very likely". At follow-up, participants