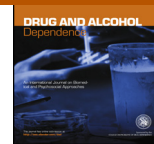




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Utilizing a train-the-trainer model for multi-site naloxone distribution programs



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ABSTRACT

Background: In order to have a substantial impact on overdose prevention, the expansion and scaling-up of overdose prevention with naloxone distribution (OPEND) programs are needed. However, limited literature exists on the best method to train the large number of trainers needed to implement such initiatives.

Methods: As part of a national overdose prevention strategy, widespread OPEND was implemented throughout multiple low-threshold facilities in Norway. Following a two-hour ‘train-the-trainer course’ staff were able to distribute naloxone in their facility. The course was open to all staff, regardless of educational background. To measure the effectiveness of the course, a questionnaire was given to participants immediately before and after the session, assessing knowledge on overdoses and naloxone, as well as attitudes towards the training session and distributing naloxone.

Results: In total, 511 staff were trained during 41 trainer sessions. During a two-month survey period, 54 staff participated in a questionnaire study. Knowledge scores significantly improved in all areas following the training ($p < 0.001$). Attitude scores improved, and the majority of staff found the training useful and intended to distribute naloxone to their clients.

Conclusion: Large-scale naloxone distribution programs are likely to continue growing, and will require competent trainers to carry out training sessions. The train-the-trainer model appears to be effective in efficiently training a high volume of trainers, improving trainers’ knowledge and intentions to distribute naloxone. Further research is needed to assess the long term effects of the training session, staffs’ subsequent involvement following the trainer session, and knowledge transferred to the clients.

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1. Introduction

Overdose prevention education with naloxone distribution (OPEND) programs train bystanders to intervene during an overdose with naloxone, an opioid antagonist. Over the past two decades, hundreds of OPEND programs have been established worldwide, with over 25,000 reported overdose reversals in the United States alone (Wheeler et al., 2015). Collectively, OPEND programs have demonstrated their feasibility and effectiveness (Clark et al., 2014), reporting decreases in overdose mortality following implementation (Evans et al., 2012; Maxwell et al., 2006; Walley et al., 2013).

With this demonstrated impact on overdose fatalities, some have called for the scaling-up of these programs as widespread public health interventions (Coffin et al., 2010; McAuley et al., 2012; Walley et al., 2013). Scaling-up could improve access to naloxone for at-risk individuals. Barriers to scaling-up health programs have been described as (a) maintaining sustained interest and commitment from the staff and leadership at the facilities, (b) lack of resources, and (c) high staff turnover (Norton and Mittman, 2010). Staff members may interpret an externally initiated project as an additional burden of work, without additional compensation. Lack of resources can impact a facility’s ability to participate in implementing the program. High staff turnover results in a lack of qualified staff able to carry-out the program, and leadership turnover may result in programs being lost entirely once new leadership is in place.

The scaling-up of OPEND programs will need to acknowledge these barriers and attempt to facilitate acceptability within the facilities. Project buy-in, consistent funding, and a high volume of

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Table 1
Participant characteristics.

	Number (%)
Gender	
Male	13 (24.1)
Female	40 (74.1)
Missing	1 (1.9)
Profession	
Nurse	20 (37.0)
Social worker	17 (31.5)
Leader	1 (1.9)
Outreach worker	1 (1.9)
Other	15 (27.8)
Facility	
Medical	28 (51.9)
Outreach	14 (25.9)
Housing	7 (13.0)
Other	3 (5.6)
Missing	2 (3.7)
Years of experience working with people who use drugs	
1–2 years	16 (29.6)
2–5 years	15 (27.8)
More than 5 years	23 (42.6)

trained staff may help to assure sustained participation, despite high turnover rates. Therefore, one of the key components of expanding OPEND programs will focus on the preparation and involvement of a large trainer workforce.

One method that has been effective in disseminating and scaling-up public health interventions are the train-the-trainer (TT) model (Yarber et al., 2015). This involves a central trainer, who trains others, who can then train others in a target population. This method has been effective in various fields, including HIV education (Williams et al., 2014a) and mental health services (Limm et al., 2015). A benefit to this method is its ability to train a high volume of trainers in a relatively short amount of time. The participants are often already working directly with the target group, and are in a prime position to carry out the intervention once trained. Although studies have evaluated OPEND programs (Clark et al., 2014), few have discussed the experiences of training the trainers necessary for large-scale OPEND operations.

Over the past several years, advocacy organizations, researchers, and politicians have discussed the importance of peer-administered naloxone in Norway. This discussion fostered the launch of a **national overdose strategy in 2014** by the Department of Health. The strategy included funding for a University initiative to implement and evaluate multi-site OPEND throughout Norway's two largest cities (Norwegian Directorate of Health, 2014). Widespread naloxone distribution was a focus for the project and involved key existing community staff and facilities as distribution sites (Lobmaier and Clausen, 2016). A brief TT course was developed to prepare staff at the targeted facilities to distribute naloxone to their clients. The aims of this study are to (a) describe the development of a TT course for OPEND at multiple facilities, and (b) evaluate the impact of the course on knowledge and attitudes towards being a naloxone trainer for the diverse staff.

2. Methods

2.1. Setting

From June 2014–November 2015, trainer sessions were held at various low-threshold facilities. The decision for a facility to participate was initiated by each site, primarily by the facility leadership. All sites were located within Oslo and Bergen, Norway's two largest cities.

2.2. Participants

The trainer course was available to all staff employed at the facilities, regardless of educational background or position. Attendance at a trainer course was voluntary, yet most sites encouraged all staff to attend. Information on those that did not choose to attend was not collected. During a two-month survey period a questionnaire was issued sequentially during all trainer sessions. All participants who attended training for their first time during this period responded. The questionnaire was given immediately before and after the trainer course to evaluate changes in knowledge and attitudes.

2.3. Intervention

2.3.1. Development of the train-the-trainer course. The curriculum for the naloxone training was adapted from existing resources (Wheeler et al., 2012), and utilized the feedback received from focus and reference groups. The trainer course covered (1) background and rationale for OPEND, (2) mechanisms of an opioid overdose, (3) effects of naloxone, (4) signs of an overdose, (5) response to an overdose, (6) project record-keeping documentation, (7) assembly and administration of intranasal naloxone, and (8) possibilities for implementation within each site.

2.3.2. Sessions. Standard trainer sessions were performed by three central trainers. The sessions lasted approximately two hours and utilized a PowerPoint presentation. Following the presentation, participants practiced assembling the intranasal device and filling out the necessary record-keeping documentation. An upcoming impact study is underway, and trainers were instructed on how to keep track of distribution and refill rates at their sites through the use of questionnaires. Participants left with a one-page curriculum summary of the course.

2.3.3. Access to intranasal naloxone. An agreement with the Norwegian Medicines Agency allowed for the distribution of naloxone to occur without a prescription or physician for the duration of the project. This gave non-healthcare staff the ability to distribute to any client interested and likely to witness or experience an overdose, but required that the necessary training and documentation accompanied. The names and workplace were recorded for all staff that attended the trainer course, and only those attending were allowed to distribute naloxone. Trained staff were not able to subsequently train their colleagues to be trainers.

2.4. Assessment measures

2.4.1. Knowledge scale. The opioid overdose knowledge scale (OOKS; Williams et al., 2013) was modified to anonymously assess pre- and post- knowledge with the trainer course. The OOKS assesses knowledge about risk factors for overdosing, the signs of an overdose, response to an overdose, and the use of naloxone. The self-administered multiple-choice questionnaire has proven to be internally reliable (Williams et al., 2013).

2.4.2. Trainer attitudes. Additional questions were asked about the participants' perception (rated from 1 = low, to 5 = high) of their understanding and comfort teaching others about (a) overdose risk factors, (b) prevention techniques, (c) recognizing risk factors, and (d) response to an overdose, as well as their preparedness to train others. Comparable ratings about their attitudes towards peer-administered naloxone, the format and usefulness of the training, and their intention and confidence in training others were collected.

Table 2
Participant responses to opioid overdose knowledge scale.

Item	Pre-training mean (SD)	Post-training mean (SD)	Wilcoxon Z/P-value
Knowledge total ^a	30.56 (5.05)	35.52 (2.46)	−6.19, P<0.001
Risks (out of 9)	6.46 (2.03)	7.39 (1.57)	−4.50, P<0.001
Signs (out of 10)	7.78 (1.57)	8.81 (1.18)	−4.31, P<0.001
Action (out of 11)	10.11 (1.06)	10.83 (0.42)	−4.46, P<0.001
Naloxone use (out of 9)	6.32 (1.96)	8.48(0.67)	−5.82, P<0.001

^a Two questions were removed from the scale as they applied to injectable naloxone and this project utilizes intranasal naloxone. The modified scale comprised 17 pre- and 24 post-test items. Removing six possible points from the original scale resulted in total scores from 0 to 39.

2.5. Statistical analyses

Descriptive statistics and frequency measures were used to describe the characteristics of the sample. The Wilcoxon Paired Signed Rank test was used. Effect scores were interpreted using Cohen criteria (0.1 = small effect, 0.3 = medium effect, 0.5 = large effect). Only questionnaires that were filled out completely in the pre-test and post-test were used for analysis. A 5-point Likert scale was used to assess various areas of attitudes, and means were calculated from the responses. Data was analyzed using SPSS Version 22.

2.6. Ethical approval

This study was approved by the Norwegian Data Protection Official for Research and the Regional Ethics Committee.

3. Results

3.1. Train the trainer method and staff characteristics

During an 18 month period, 41 trainer sessions were carried out by one of the three lead trainers. This prepared 511 staff to distribute naloxone, which then resulted in nearly 2000 naloxone kits distributed during that time. During a two-month period, staff (n = 54) were asked to participate in the survey study. Females accounted for 74% of the sample, and the majority of staff had over five years of experience working with people who inject drugs (PWID) (n = 23, 42.6%). Thirty-seven percent were nurses (n = 20) from medical facilities (n = 28, 51.9%) (Table 1).

3.2. Knowledge scale

There was a significant (p < 0.001) increase in scores for all areas of knowledge assessed (Table 2). The effect size was medium to large in all areas, with the largest in naloxone use (r = 0.56) and the total overall score (r = 0.6). The total average score increased from 78.4% to 91.1% correct in the post-test.

3.3. Attitudes scale

Prior to the training, staff reported their understanding of risk factors, prevention techniques, recognition and response to an overdose to be on average 3.17 (SD = 0.95). Following the training, self-reported scores significantly increased (p < 0.001) to 4.3 (SD = 0.56). In addition, their comfort teaching others in these areas increased (p < 0.001) from 2.85 (SD = 0.98) to 4.07 (SD = 0.59).

There was a significant increase in the staffs' attitudes towards naloxone's role in overall prevention work (p = 0.001), increasing from a mean score of 4.24 (SD = 0.74) to 4.57 (SD = 0.57). The staffs' reported preparedness to train others and to respond to an overdose if they themselves encounter one significantly increased (p < 0.001) from 2.22 (SD = 0.97) to 4.22 (SD = 0.55). Staffs' beliefs that PWID should be trained and equipped with naloxone were

comparably high pre- and post-test (4.68 and 4.75 respectively, p = 0.569).

3.4. Usefulness and intentions following the course

The majority (n = 49, 90.7%) of the sample rated the 2-h training course an adequate amount of time and most respondents (n = 37, 68.5%), felt that the PowerPoint presentation was an appropriate delivery method. The usefulness of the course had a mean score of 4.68 (SD = 0.7) and their intent to distribute was 4.51 (SD = 0.88). Participants on average responded that their confidence to train others following the course was high, 4.37 (SD = 0.64).

4. Discussion

Overdose prevention programs must find effective and efficient ways to respond to the growing overdose epidemic. Large-scale naloxone distribution programs have been suggested as a means to reach a large number of at-risk individuals, but must strive to avoid potential barriers while scaling-up. The TT method utilized in this study significantly increased knowledge and positive attitudes for the staff participants. The ability for three central trainers to train over 500 staff in 18 months demonstrated the efficiency of the method. The majority of responding staff found the trainer course appropriate in time and delivery method.

Knowledge scores improved in all areas assessed which is consistent with others who have reported increases following naloxone training (Behar et al., 2015; Klimas et al., 2015; Mayet et al., 2011; Williams et al., 2014b). These studies have focused on the transfer of knowledge from the trainer to various recipients, including relatives (Williams et al., 2014b), PWID (Behar et al., 2015), and general practitioners (GPs; Klimas et al., 2015), and concluded that their training sufficiently equipped participants to use naloxone in the event of an overdose. In our study, we found that along with increased knowledge scores, the self-reported rating of their comfort teaching others about overdoses improved. This indicates that the course not only prepared them didactically, but strengthened their self-efficacy in the role as trainer.

The scores for 'actions to take while witnessing an overdose' were generally high among the trainers. This is consistent with Mayet et al. who found that their clinician participants were knowledgeable in actions to take during an overdose (Mayet et al., 2011). For all areas assessed, the greatest improvement was seen in scores on naloxone use. This increase suggests that although staff have existing knowledge on actions to take while witnessing an overdose, and many years of relevant experience, specific training in naloxone can be beneficial before implementing an OPEND program.

4.1. Limitations

Findings from this study should be considered in regards to its limitations. First, this study did not measure retained trainer knowledge, or the propensity to train clients after being trained. Although this data is important, our study primarily focused on the

method used for training trainers. Further studies will be needed to confirm the lasting effectiveness of the method, including trainer acceptability and ownership in an OPEND intervention. Second, the training session and the survey were administered in English, not in the native Norwegian language. Although most Norwegians are fluent in English, it is possible that the testing in a foreign language was more difficult for the participants. This however would likely result in our reported results being a more conservative estimate of change and effect.

4.2. Conclusions

Widespread naloxone distribution initiatives need substantial program support, (Coffin et al., 2010; Heller and Stancliff, 2007) with a large trainer workforce available to perform trainings. A lack of trained colleagues has been described by others as a barrier for scaling-up public health programs (Norton and Mittman, 2010). Having an abundance of trained colleagues would not only provide the trainers necessary in the face of high turnover, but may also improve accessibility. Training this group can be achieved through a centrally organized host, utilizing the TT model allowing for knowledge gains and attitude improvement towards naloxone distribution. Although this appears to be an effective method in training trainers, the subsequent trainer acceptance, dissemination to clients, as well as the clients' correct use of naloxone will serve as a true marker of its effectiveness. Participation and prioritization in an externally initiated OPEND program will not only require attendance to a training session, but will to rely on interests among leadership, staff, and clients aligning in order to accept and adopt the initiative. As naloxone programs continue to scale-up, further research is needed to assess the long term effects of the training, staffs' subsequent involvement following the trainer session, and the knowledge transferred to the clients.

Role of the funding source

Nothing declared.

Contributors

D. Madah-Amiri contributed to the study design, data collection and analysis, and drafted the manuscript. P. Lobmaier and T. Clausen both contributed to the study design, data interpretation, and manuscript revision. All authors approved the final article.

Conflict of interest

P. Lobmaier has acted as paid consultant for Indivior, a pharmaceutical company providing a range of drugs relevant to the addiction medicine field.

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medication costs, and evaluation of the intervention for the duration of the project period.

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