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Research Paper

# Evaluation of the Staying Alive programme: Training injection drug users to properly administer naloxone and save lives

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**Abstract**

*Background:* In response to the high rates of opiate-related overdoses and deaths in the United States, a number of overdose prevention programmes have been implemented that include training drug users to administer naloxone, an opiate antagonist. The purpose of this study was to evaluate the Staying Alive (SA) programme in Baltimore, Maryland, which trained drug users to prevent and respond to opiate overdose using techniques including mouth-to-mouth resuscitation and administration of naloxone.
*Methods:* Participants for the SA programme were recruited from multiple locations by Baltimore City Health Department Needle Exchange programme staff. A 1-h training was conducted by two facilitators. Participants who successfully completed the programme were provided with a kit that contained naloxone. Participants in the evaluation study were enrolled prior to the training session. The present analysis includes 85 participants who completed a pre- and post-test evaluation survey.
*Results:* At both time points, 43 participants reported having witnessed an overdose. Post-training, naloxone was administered by 19 with no reported adverse effects. Post-training, a greater proportion of participants reported using resuscitation skills taught in the SA programme along with increased knowledge specifically about naloxone.
*Conclusions:* Results from this study provide additional evidence to support the effectiveness of overdose prevention training programmes that include skills building for drug users to administer naloxone.


*Keywords:* Overdose; Naloxone; Prevention; Evaluation

## Introduction

In response to the high rates of opiate overdose related medical emergency department visits and fatalities in the United States (Substance Abuse and Mental Health Administration, 2002, 2003), several opiate overdose prevention programs have been implemented in Chicago (Maxwell, Bigg, Stanczykiewicz, & Carlberg-Racich, 2006), New York (Piper et al., 2007), San Francisco (Seal et al., 2005) and New Mexico (Sporer & Kral, 2007). These programmes aim to increase knowledge about overdose risk factors, enhance recognition of the signs and symptoms of opiate overdose, and train and practice in resuscitation methods such as rescue breathing (mouth-to-mouth resuscitation). They also train participants in developing overdose prevention strategies.

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Many programmes have included training in administration and provision of prescribed naloxone, an opiate antagonist. Naloxone is a safe and effective treatment used commonly by emergency medical personnel and in emergency rooms for the treatment of opiate overdose (Sporer & Kral, 2007).

Evaluations of several existing naloxone overdose prevention programmes have documented positive outcomes of successful reversals of opiate overdose by peer administered naloxone with few adverse effects to the victim (Dettmer, Saunders, & Strang, 2001; Galea et al., 2006; Maxwell et al., 2006; Seal et al., 2005; Sporer & Kral, 2007; Strang et al., 1999; Strang, Best, Man, Noble, & Gossop, 2000). For example, results from an evaluation in Chicago reported that 319 reversals were documented over a 5-year time period (Maxwell et al., 2006). Furthermore, decreases in injection drug use and increased entry into drug treatment after overdose training have been reported by drug users in San Francisco (Seal et al., 2005). These results lend support to the value of training drug users to properly intervene during opiate overdose.

The few published evaluations of overdose prevention training programmes using naloxone have included a small sample size (less than 25 participants) and focused primarily on reports of whether the programme led to reversals of opiate overdose using naloxone. Less has been reported about programme effects on knowledge specific to naloxone use and on level of comfort to intervene during overdose.

The Staying Alive programme (SA) was designed and implemented by the Baltimore City Health Department (BCHD). Participants were recruited by SA programme staff through street-based outreach and advertising at the BCHD Needle Exchange programme locations. The training was conducted at multiple locations throughout Baltimore City. Participants were enrolled by SA programme staff who explained the purpose of the training and obtained written consent, which was approved by the BCHD Institutional Review Board. The curriculum included a review of risk factors, signs and symptoms of opiate overdose and strategies for preventing opiate overdose. Skills training for intramuscular injection of naloxone, rescue breathing, and placing someone on their side (e.g. the recovery position) were also provided and participants were required to practice on models. Participants who successfully demonstrated the ability to properly administer naloxone were then provided with a naloxone kit which included three 5 $cm^3$ syringes with intramuscular needles, one 10 mL bottle of 0.4 mg/mL naloxone, a face shield for rescue breathing, a sharps container and a prescription for naloxone with refills.

The purpose of the study was to evaluate programme effectiveness of teaching injection drug users about (1) recognition of opiate overdose signs and symptoms, (2) how to respond to opiate overdose (including administration of naloxone), (3) basic facts about naloxone and (4) opiate overdose prevention strategies.

## Methods

### *Recruitment of participants for Evaluation Research study*

Enrolment for the evaluation study was conducted from October 2004 through April 2005. After participants were enrolled into the Staying Alive programme, but prior to the programme session, evaluation staff approached participants and described the purpose of the evaluation study. Participants, who expressed interest in participating in the evaluation research study, then met individually with trained research staff who obtained written informed consent which was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board. A brief assessment was administered prior to their participation in the programme and locating information was collected so that the evaluation staff could contact participants 6 months after the training. Participants were paid $10.00 each for the pre- and post-test assessment.

The evaluation staff was unable to ask all participants to enrol in the evaluation component as the sessions were held at a variety of locations and times. Therefore, we were unable to assess to rates of participation. Of 250 participants who were enrolled into the evaluation study, participants who returned for the post-training ($n = 85$) were older (44 years versus 40 years; $p = 0.002$) compared to those who did not complete the post-survey. There were no statistical differences between groups on gender, number of personal overdoses, number of witnessed overdoses, knowledge about administering naloxone, rescue breathing, CPR, or placing someone in the recovery position (lying them on their side). The final sample for this study included 85 participants who completed both pre- and 6-month post-assessments.

### *Measures*

#### *Baseline measures*

Data were based on self-reported gender, age, race/ethnicity, drug and alcohol use in the past 6 months, and number of lifetime overdoses experienced.

#### *Overdose witness history and responses*

Participants reported the total number of overdoses that they had witnessed in their lifetime. For the most recent overdose witnessed, participants were asked “What did you or the others present do for the victim?” Multiple responses, of eleven categories (e.g. called 911, mouth-to-mouth resuscitation, used ice or water, etc.) were allowed.

#### *Baseline knowledge*

Participants were asked three questions to assess their knowledge about risk factors for opiate overdose (e.g. drinking alcohol when using opiates, injecting quickly, using opiates after detoxification). During the enrolment process for Staying Alive, programme staff described naloxone as a