



Naloxone Distribution and Cardiopulmonary Resuscitation Training for Injection Drug Users to Prevent Heroin Overdose Death: A Pilot Intervention Study

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ABSTRACT *Fatal heroin overdose has become a leading cause of death among injection drug users (IDUs). Several recent feasibility studies have concluded that naloxone distribution programs for heroin injectors should be implemented to decrease heroin overdose deaths, but there have been no prospective trials of such programs in North America. This pilot study was undertaken to investigate the safety and feasibility of training injection drug using partners to perform cardiopulmonary resuscitation (CPR) and administer naloxone in the event of heroin overdose. During May and June 2001, 24 IDUs (12 pairs of injection partners) were recruited from street settings in San Francisco. Participants took part in 8-hour training in heroin overdose prevention, CPR, and the use of naloxone. Following the intervention, participants were prospectively followed for 6 months to determine the number and outcomes of witnessed heroin overdoses, outcomes of participant interventions, and changes in participants' knowledge of overdose and drug use behavior. Study participants witnessed 20 heroin overdose events during 6 months follow-up. They performed CPR in 16 (80%) events, administered naloxone in 15 (75%) and did one or the other in 19 (95%). All overdose victims survived. Knowledge about heroin overdose management increased, whereas heroin use decreased. IDUs can be trained to respond to heroin overdose emergencies by performing CPR and administering naloxone. Future research is needed to evaluate the effectiveness of this peer intervention to prevent fatal heroin overdose.*

KEYWORDS *Heroin, Heroin-related deaths, Injection drug use, Overdose, Prevention.*

INTRODUCTION

Dramatic increases in the incidence of fatal opiate overdose have shadowed burgeoning heroin epidemics in several countries.^{1,2} In the United States, each year, more injection drug users (IDUs) die from heroin overdose than from any other cause, including AIDS, hepatitis, or homicide.³ In fact, heroin overdose was the single

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largest cause of accidental death in San Francisco, California from 1997 to 2000.⁴ Many of these deaths are preventable because heroin overdose can be readily reversed through the timely injection of naloxone, a legal, unscheduled opiate antagonist routinely used by emergency medical personnel to quickly and safely reverse opiate overdose.⁵ Peers witness most overdoses,⁶ but deaths occur because drug users are hesitant to summon emergency medical services for fear of police involvement^{7,8} and their attempts at resuscitation are often unsuccessful.^{8,9}

Naloxone effectively reverses opiate overdose. Naloxone precipitates acute withdrawal symptoms in opiate-dependent persons, but has no effect on nonopiate users; serious adverse effects are rare and naloxone has no abuse potential.⁹ Several feasibility studies have concluded that if injection heroin users were provided naloxone and resuscitation training, including training in CPR and rescue breathing, they might be able to intervene to prevent heroin overdose fatalities in their peers.^{8,10,11} Recently, through both underground and government-sponsored programs, naloxone has been made available to drug users in Germany, Italy,^{12,13} and in the United States, in Baltimore, Maryland, Chicago, Illinois¹⁴ and Rio Arriba County, New Mexico.¹⁵ There have been no formal evaluations of these programs however, and thus their effectiveness has not been established.^{14,16,17}

Although naloxone is not routinely prescribed to laypersons in the United States, naloxone distribution programs are being planned or considered in the United States—in other localities including New York City, New Haven, Connecticut, and several counties in Northern California. These programs have encountered political barriers, however, owing to concerns that naloxone will be viewed by drug users as a “safety net,” thus enabling more drug use, increasing the number of overdoses, and decreasing the use of emergency services.¹⁸ Moreover, while the legality of prescribing naloxone to laypersons for use in others who overdose has been called into question by politicians and physicians alike, a recent legal analysis provides justification for the prescription of naloxone.⁵ To date, there have been no prospective trials of naloxone distribution in North America to investigate these specific concerns. In collaboration with the San Francisco Department of Public Health, the Urban Health Study at the University of California, San Francisco developed and implemented a pilot overdose prevention and management program to train heroin injectors to perform cardiopulmonary resuscitation (CPR) and administer naloxone to injection partners in the event of a heroin overdose emergency. Participants were followed for 6 months to investigate the safety and feasibility of this intervention.

METHODS

Study Participants

During May and June 2001, 487 IDUs participating in the Urban Health Study, a semiannual cross-sectional serosurveillance study of injection drug users (IDUs), were recruited from street settings in San Francisco and screened for enrollment. IDUs were eligible if they injected heroin at least twice a week, reported one or more heroin overdoses in the past 5 years, and could enroll together with an eligible injection partner who met the same criteria. The study was approved by the University of California, San Francisco Committee on Human Research, and each participant provided written informed consent.