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Preventing Death Among the Recently Incarcerated: An Argument for Naloxone Prescription Before Release

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Abstract

PURPOSE—Death from opiate overdose is a tremendous source of mortality, with a heightened risk in the weeks following incarceration. The goal of this study is to assess overdose experience and response among long-term opiate users involved in the criminal justice system.

PROCEDURES—137 subjects from a project linking opiate-dependent individuals being released from prison with methadone maintenance programs were asked 73 questions regarding overdose.

FINDINGS—Most had experienced and witnessed multiple overdoses, 911 was often not called. The majority of personal overdoses occurred within one month of having been institutionalized. Nearly all expressed an interest in being trained in overdose prevention with Naloxone.

CONCLUSIONS—The risk of death from overdose is greatly increased in the weeks following release from prison. A pre-release program of overdose prevention education, including Naloxone prescription, for inmates with a history of opiate addiction would likely prevent many overdose deaths.

Keywords

Naloxone; opiate; overdose; prison; incarceration

INTRODUCTION

Drug overdose deaths are an internationally recognized public health concern. Roughly 50 percent of all illicit drug users in the United States report having experienced one or more nonfatal overdoses and the rate of fatal, accidental overdoses has increased steadily during the last decade¹. In 1999, Heroin claimed at least 4,820 lives in the United States, with an additional 16,646 non-fatal overdoses presenting to Emergency rooms across the country². In 2002, prescription painkillers resulted in nearly five times that many deaths³. In New York City alone, there were 8,774 confirmed drug overdose fatalities between 1990 and 2000, with the percentage of attributed to opiates-only rising from 30.6 percent to 40.1 percent during that time⁴. In addition, overdose in the U.S. causes more deaths each year among injection drug users than AIDS, Hepatitis B, Hepatitis C, cardiovascular disease, suicide, or homicide. In San Francisco it was the leading cause of accidental death between 1997 and 2004^{5, 6}. Internationally, overdose has also been recognized as a significant public health risk. Opiate

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users in Sweden have been found to have an 18.3 times increased mortality risk compared to the general population, with overdose accounting for over half of deaths⁷.

While any opiate user is at risk for overdose, those who have had a recent period of abstinence are at an even greater risk. Prolonged or repetitive opiate administration leads to a variety of adaptive changes throughout the nervous system at the cellular level that results in the development of physiological tolerance and dependence⁸. This tolerance necessitates larger and more frequent administrations of the drug to achieve similar effect. However, these adaptive changes in the receptor are reversed after a period of abstinence. In mice, it has been demonstrated that tolerance to opiates is not only rapidly and completely reversible, but also that one cycle of dependence and recovery does not result in greater tolerance for subsequent drug administration⁹. A similar phenomenon occurs in humans. A study measuring hair morphine content in a group of deceased heroin users, found that the majority of overdose deaths occurred in users who had abstained in the four months preceding the fatal overdose¹⁰. A more recent study examining 74 overdose deaths, found that among those who accidentally overdosed, 40 percent had relapsed after a period of abstinence and 19 percent had recently been institutionalized for treatment¹¹. Similarly, a study looking at addicts recently released from residential treatment, found a seven times increased risk of overdosing in the two weeks after discharge¹².

Due to the increased risk of overdose following periods of abstinence, recently released inmates who use opiates are at particularly high risk to experience an overdose. The transition and reintegration back into the community is a vulnerable time for all former inmates, marked by increased mortality rates¹³⁻¹⁸. A study in Scotland of 19,000 men between the ages of 15 and 35 recently imprisoned found that overdose deaths are eight times more likely in the two weeks following release than in a comparable group of men who had not just been incarcerated¹⁹. A similar study performed more recently supported this data, with young men dying from drug overdose seven times more often in those first 14 days after release²⁰. In the United States, the risk of death from overdose immediately following release is perhaps even higher. A 2003 study in the New England Journal of Medicine of 30,237 subjects, found a 12.7 times increased risk of death, with the leading cause being drug overdose¹⁸.

The high mortality rates among opiate users has led to increased effort from the public health community across the country to respond with prevention strategies. Heroin overdoses generally occur 1 to three hours after injection and in the company of others². As such, these circumstances provide an ideal opportunity for intervention in general and particularly for interventions with peer administered Naloxone, a prescribed overdose antidote. Naloxone has been distributed to drug users through public health programs across the country since 1999⁶. In a follow-up study of New York City's pilot program, all overdose victims who were administered Naloxone survived²¹. Comparable results were demonstrated in San Francisco, where researchers found a 100% survival rate amongst overdose victims resuscitated with Naloxone⁶.

While not in the scope of this paper, another public health response to prevent mortality from overdose is encouraging the use of 911. Barriers to the use of 911 include fear of police involvement²². This aversion to law enforcement may be even more pronounced among ex-offenders on probation. Immunity laws to protect individuals who call 911, in conjunction with Naloxone distribution, may increase 911 use and survival rates from opiate overdose.

This paper illustrates the significant risk of overdose associated with recent release from prison, and highlights the success of Naloxone distribution. Based on these findings we argue that Naloxone should be distributed to prisoners with a history of opiate use prior to release. Due

to the substantial lack of treatment beds available, Naloxone may be the only life-saving option available for this population during the critical weeks following incarceration.

The goal of this study is to examine the perceptions and experiences of overdose among long-term opiate users involved in the criminal justice system.

METHODS

Subjects

Long-term opiate users involved in the criminal justice system were administered a 73-question survey concerning their drug use and overdose history. Respondents participated in Project MOD, a service project linking opiate-dependent individuals recently released from incarceration with community methadone maintenance programs.²³ The primary goal of the program was to reduce the risk of disease transmission, reduce recidivism, improve overall health, and increase personal stability. Recruitment occurred through inmate self-referral and discharge planner referral at the Rhode Island Department of Corrections (62%) and through community word of mouth (32%). Project MOD enrolled 482 clients between May 2003 and March 2008.

Questions focused on their personal history of overdose, their experience witnessing overdoses both fatal and non-fatal, as well as what methods they had used to attempt to revive an overdose victim. This study was reviewed and approved by the Miriam Hospital Institutional Review Board (IRB) and the Federal OHRP.

RESULTS

The overdose module was administered to 137 participants between June 2003 and May 2004. Almost half the respondents were women and the majority were Caucasian. In the 30 days prior to the survey, high rates of heroin and cocaine use were reported. Please refer to Table 1.

Overdose Experiences

A personal history experiencing or witnessing an overdose was prevalent among the survey participants. Personal experience with an overdose was considerable; over half of the group reported that they had overdosed at least once (53 percent, mean four), where eighteen percent of total participants had done so in the last six months (mean two). Five participants reported a total of ten or more overdoses.

Over half of those who experienced an overdose, (64 percent) had been released from an institutional setting within one month of the event, including prison, (36 percent) detox (15 percent), and the hospital (13 percent).

The majority of participants had *witnessed* at least one overdose (80 percent, mean four) and knew someone who had died from an overdose (72 percent). Over a quarter of participants (28 percent) witnessed a fatal overdose.

Overdose Response

Of those *experiencing* an overdose, only 48 percent reported that 911 was called. Similarly, of those that *witnessed* an overdose, 52 percent reported calling 911. The most common reasons cited for not calling 911 were: "the victim came to/woke up" (n=29 among experiencing overdose group, n=21 among witnessing OD group), "fear of police involvement" (n=2 among

experiencing OD group, n=6 among witnessing OD group), and “tried to handle the situation alone” (n=1 among experiencing OD group, n=9 among witnessing OD group).

Participants who witnessed an overdose reported the utilization of various “home remedies” in attempts to revive an individual experiencing an overdose. The techniques were employed on a stand-alone basis and in addition to calling 911. These methods included: physical disturbance (shaking, slapping, etc.) (20%), putting the person in a cold bath/shower (41%), putting ice on his or her body (67%), injecting salt water (16%), and using rescue breathing (20%). No participants reported using Naloxone.

Perceptions of Naloxone

As Naloxone was not available in Rhode Island at the time of the study, none of the participants had experience using it. Approximately three quarters of participants (72 percent) reported interest in having Naloxone prescribed to them in case of an emergency. Nearly 90 percent of subjects reported willingness to participate in a two-hour training session to learn about overdose prevention and recognition, rescue breathing, and Naloxone administration.

Participant Mortality

Of the 137 respondents, five have died since the completion of the overdose survey. Three of the five were confirmed to have died of an overdose (acute intoxication) of both opiates and cocaine. A fourth died within 48 hours of release of unconfirmed causes.

DISCUSSION

Death from opiate overdose is a tremendous source of mortality, both in the United States and internationally. All drug users are at risk for overdose. However, those recently released from institutional settings, particularly prison, have greater mortality rates than their peers^{12, 19, 20}.

The results of this study highlight the significant risk of overdose among long-term drug users coming out of prison. The majority of subjects had both witnessed and experienced an overdose. Among those with a recent personal history, nearly two-thirds had occurred within one month of release from an institutional setting. Only approximately half of respondents reported calling 911 in the event of an OD, with fear of police involvement, and a belief that they could handle the situation themselves among the most common reasons for not calling.

Paramedics and emergency room physicians have long used Naloxone as an antidote to opiate overdose^{24, 25}. In recent years, numerous programs have been developed in communities around the country to train and provide opiate users with Naloxone for peer administration with remarkable success^{21, 26-28}. Given that the majority of overdose deaths occur in the company of other people and with several hours between overdose and death, having Naloxone on hand along with a basic knowledge of how and when to use it, is a feasible and effective means of preventing mortality.

Given the dramatic increase in risk of death from overdose following release from prison, as highlighted by the participants in this study who were in prison in the weeks prior to overdose, planning for overdose prevention should be a key component of prison aftercare. Each of these individuals who died from overdose following this study had been seen by a physician before being released from prison, at which point they could have been given Naloxone. These represent missed opportunities for a life saving intervention. An estimated twenty-four to thirty-six percent of all heroin users pass through the corrections system each year, representing more than 200,000 individuals²⁹. Contact with each of these individuals presents the

opportunity to prescribe Naloxone and thereby introduce it into high-risk communities of drug users. Because of the transient nature of this population and the increased risk of death from overdose immediately following release from prison, in addition to a fear of calling 911, it is even more crucial to maximize the physician-inmate/opiate user point of contact that occurs during incarceration and ensure that inmates at risk leave prison with Naloxone in hand. While this study looked at users involved in the criminal justice system and focused specifically on overdose risk following release from prison, these results would likely be generalizable to any institutional setting. Release from detox centers, methadone maintenance programs, and hospitals would be other critical moments to implement Naloxone distribution.

The limitations of this study include its small size and its limitation to opiate-users who self-selected as those interested in methadone maintenance and had therefore chosen to be a part of Project MOD. In addition, we did not control for length of incarceration and the effect this could have on reduced tolerance. While it is likely that these results could be extended to any opiate users leaving an institutionalized setting, further studies should be conducted to determine the extent of the generalizability.

SUMMARY

The results of this study demonstrate that the majority of long-term drug users are likely to both experience and witness a drug overdose on multiple occasions, with risk of overdose increased in the period of time immediately following incarceration. Given the success of peer-administered Naloxone, the incorporation of overdose prevention education and Naloxone distribution during the discharge planning process would be a feasible intervention to significantly reduce mortality rates among opiate users.

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Table 1

Participant Demographics (n,137)

Male	54%
Female	46%
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Caucasian	70%
Hispanic	13%
African American	11%
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Recent Drug use:	
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Illicit drug use	
1 month prior to survey	90%
Heroin	81%
Cocaine	43%
Benzodiazepines	20%

Table 2

Overdose Responses*

Calling 911	52%
Naloxone	0%
Rescue Breathing	20%
Physical Disturbance (shaking, slapping, etc.)	46%
Cold Bath/Shower	41%
Injecting Salt Water	16%
Ice on Body/Genitals	67%

* Of those who witnessed an OD