

## Attitudes of Australian Heroin Users to Peer Distribution of Naloxone for Heroin Overdose: Perspectives on Intranasal Administration

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**ABSTRACT** *Naloxone distribution to injecting drug users (IDUs) for peer administration is a suggested strategy to prevent fatal heroin overdose. The aim of this study was to explore attitudes of IDUs to administration of naloxone to others after heroin overdose, and preferences for method of administration. A sample of 99 IDUs (median age 35 years, 72% male) recruited from needle and syringe programs in Melbourne were administered a questionnaire. Data collected included demographics, attitudes to naloxone distribution, and preferences for method of administration. The primary study outcomes were attitudes of IDUs to use of naloxone for peer administration (categorized on a five-point scale ranging from “very good idea” to “very bad idea”) and preferred mode of administration (intravenous, intramuscular, and intranasal). The majority of the sample reported positive attitudes toward naloxone distribution (good to very good idea: 89%) and 92% said they were willing to participate in a related training program. Some participants raised concerns about peer administration including the competence of IDUs to administer naloxone in an emergency, victim response on waking and legal implications. Most (74%) preferred intranasal administration in comparison to other administration methods (21%). There was no association with age, sex, or heroin practice. There appears to be strong support among Australian IDU for naloxone distribution to peers. Intranasal spray is the preferred route of administration.*

**KEYWORDS** *Naloxone, Heroin, Overdose, Intranasal.*

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### INTRODUCTION

Injecting drug users (IDUs) are frequently present at overdoses of others,<sup>1,2</sup> with most having witnessed at least one heroin overdose.<sup>1,3</sup> In addition, only a small proportion of overdose deaths occur immediately (~15%).<sup>4</sup> These circumstances provide an opportunity for peers to intervene to prevent death after heroin overdose. However, research has shown wide variation in both the nature and extent of peer responses at such events, in part because of reported fears of police involvement.<sup>1,5-7</sup>

Naloxone distribution for peer administration (hereafter referred to as peer naloxone distribution) has been suggested as a strategy to prevent fatal overdose<sup>2,7-9</sup> and has been implemented in countries including Italy, Germany, England, and the

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United States.<sup>10,11</sup> It has been estimated that the introduction of such programs had saved more than 900 lives by February 2006.<sup>10</sup>

While IDU have generally been shown to have positive attitudes toward peer naloxone distribution,<sup>2,6,12-14</sup> concerns have been raised about programs for a variety of reasons including a potential for increased heroin use and the promotion of drug use,<sup>2,6,15-17</sup> questions about the competence of IDU to effectively administer the drug,<sup>9,15</sup> possible adverse reactions,<sup>2,16</sup> and a possible failure to seek subsequent emergency medical support after treatment.<sup>6,12,18</sup>

There have been recommendations for the establishment of naloxone distribution programs in Australia.<sup>1,8,9</sup> A previous Australian study<sup>1</sup> reported that the majority (90%) of IDU were in favor of naloxone availability for IDUs. The aim of this study was to examine attitudes and willingness of IDUs to naloxone distribution for peer administration after heroin overdose in the context of different methods for naloxone administration.

## METHODS

Face-to-face interviews were conducted with a sample of 99 IDU recruited from three needle and syringe programs (NSP) in Melbourne, Victoria over the period July to September 2007. Recruitment was promoted by poster advertisement and referral by NSP staff. Participants were required to be over 18 years old and report having injected heroin within the previous month. Interviews lasted approximately 30 minutes, and were conducted in an office within the NSP between 9 A.M. and 5 P.M. on weekdays.

During interviews participants were administered a structured questionnaire that captured information on: demographics, personal and witnessed overdose history, and attitudes toward peer naloxone distribution (using a five-point scale, ranging from "very good idea" to "very bad idea"). Participants who expressed favorable opinions regarding peer naloxone distribution were further questioned about their preference for method of naloxone administration (intravenous, intramuscular, intranasal), willingness to call an ambulance after naloxone administration and carrying naloxone for peer administration. Participants were invited to check all responses for accuracy at completion of the interview. Participants were reimbursed AUD30 for their time and out-of-pocket expenses at interview completion. The study was approved by Monash University's Standing Committee on Ethical Research in Humans.

Participants were provided with the following definitions, previously described by Strang<sup>2</sup> and Seal et al.,<sup>6</sup> and modified for this study: 1) Heroin overdose: Overdose is defined as any of the following symptoms occurring in conjunction with your drug use: difficulty breathing, turning blue, lost consciousness and unable to be roused, collapsing. Overdose does not mean being "on the nod" or drifting in an out of consciousness; 2) Naloxone: Narcan/Naloxone reverses the effects of heroin for about an hour. It gets people breathing again and reestablishes consciousness after overdose; 3) Naloxone distribution program: Imagine you attend a training program that teaches you how to administer Narcan/naloxone. After attending this program you are given Narcan/Naloxone to take home, to use in case you or a friend overdosed on heroin.

Quantitative data were analyzed using Stata 8<sup>19</sup> with outcomes of preference for method of naloxone administration, reluctance to call an ambulance after naloxone administration and carrying naloxone for peer administration examined using

logistic regression. Univariate correlates with  $p < 0.20$  and age and gender were included in multivariate analyses.

Open-ended responses were entered as recorded into Microsoft Excel and subjected to thematic analysis.

## RESULTS

### Sample Characteristics

The majority of participants (72%) were male, median age of 35 years, and most (84%) identified their ethnic background as Australian (Table 1). Most (72%) were unemployed.

Most of the sample reported initiating heroin use in their late teens (median age 19) and had been using the drug for more than 10 years (median duration 13) (Table 2). While about half (44%) of the sample reported at least daily heroin injection, they

**TABLE 1** Sample characteristics

Variable		
Age (years)	Median	35
	Range	18 to 49
Secondary school attendance (year)	Median	10
	Range	3 to 12
Gender	% (N=99)	
	Male	71.7
Site	Female	28.3
	1	38.4
	2	33.3
Torres Strait Island/Aboriginal origin	3	28.3
	Aboriginal	8.1
	TSI	1.0
Ethnicity	Australian	83.8
	Other	13.1
	Vietnamese	2.0
	African	1.0
Accommodation	Rented house/flat	33.3
	Boarding house	29.3
	Lives with family/friend	14.1
	No fixed address	12.1
	Own house/flat	6.1
	Treatment Service	3.0
Living circumstances	Shelter/refuge	2.0
	Lives with someone else	54.6
	Lives alone	33.3
	No fixed address	12.1
Employment	Unemployed	71.7
	Full-time	5.1
	Casual	4.0
	Part-time	3.0
	Student	3.0
	Home duties	3.0
	Other	4.0

**TABLE 2 Drug use history**

Variable		
Duration of injecting heroin use (years)	Median	13
	Range	4 months to 31 years
Initiation age (years)	Median	19
	Range	7 to 45 years
Drugs injected in the previous 6 months	% (N=99)	
	Morphine	22.2
	Ecstasy	11.1
	Speed	60.6
	Ice	28.3
	Cocaine	11.1
Frequency of heroin use	LSD	3.0
	>3x/day	2.0
	2-3/day	24.2
	Daily	18.2
	Weekly	3.0
	Bi-weekly	33.3
	Fortnightly	8.1
	Monthly	11.1
Location during injection	Own home	67.7
	Friend's home	16.2
	Dealer's home	6.1
	Street/park	36.4
	Venue toilet	3.0
	Public toilet	12.1
	Car	17.2
Injection companion	Friend	51.5
	Alone	40.4
	Acquaintance	8.1
Inject with other drugs/alcohol	Total	83.8
	Valium	23.2
	Opiate	14.1
	Ice	6.1
	Speed	23.2
	Psychiatric Medication	11.1
	Marijuana	21.2
Current drug treatment	Alcohol	51.5
	Methadone	19.2
	Buprenorphine	12.1
	Suboxone	5.1

also frequently reported the use of other drugs (e.g., “speed” [61%], “ice” [28%], and morphine [22%]). Around one third were in substitution therapy (methadone [19%], buprenorphine [12%], and suboxone [5%]). Fifty-two percent reported injecting heroin while consuming alcohol. Most (68%) reported injecting heroin in their own home. More reported injecting in company (60%) rather than alone (40%).

Most participants (61%) had experienced a heroin overdose, with the median number of reported episodes being three. Thirty-eight percent reported that

naloxone was administered to them after their most recent overdose. Personal overdose occurred more than 6 months ago for 85% of participants and 84% had previously witnessed an overdose.

### **Attitudes to Peer Naloxone Distribution**

The large majority of the sample reported positive attitudes toward peer naloxone distribution (good to very good idea: 89%). Further, 92% said they were willing to participate in a related training program if made available. Reported reasons for these attitudes included beliefs that peer naloxone distribution may reduce morbidity and mortality by reducing delays to treatment, preservation of ambulance services for other medical emergencies, avoidance of authority involvement, improved response to heroin overdose with additional resuscitation training, empowerment of heroin users to help others, and reduction of the long-standing physical and psychological impact of personal and witnessed overdose.

Respondents generally reported that they would teach other IDUs how to administer naloxone (94%), would administer naloxone to an overdose victim (96%), and would accept naloxone treatment from a peer (86%). Most (94%) reported that they would remain with an overdose victim after administering naloxone to a peer. Sixty-nine percent said they would carry naloxone on their person if trained in its use. The majority (90%) of respondents reported they would have administered naloxone to a victim of their last witnessed overdose if it had been available to them.

Fifty-nine (62%) participants thought they would be reluctant to request ambulance services after administering naloxone to an overdose victim. Sixty-nine percent said they would carry naloxone on their person if trained in its' use. After univariate analysis, no variable was associated with reluctance to request an ambulance after naloxone administration or carrying naloxone for peer administration.

### **Preference for Method of Administration**

Responses to all survey items were not volunteered by all participants so frequencies are reported for each item. Of those who regarded peer naloxone distribution favorably, there was cited preference for intranasal administration (74%; 70/95) and supply from NSPs (68%; 63/93). Reasons given for intranasal preference included ease of administration, reduced blood-borne viruses (BBV) risk, eliminating the need for needles/syringes on the person, vein preservation, painlessness, and less alarming public use. On multivariate analysis, no variable (Table 3) was significantly associated with preference for administration of naloxone via the intranasal route.

When asked an open-ended question about concerns for peer naloxone distribution, unprompted responses included concerns with adverse events (many reported witnessing sudden and acute heroin withdrawal from overdose victims who had received naloxone from paramedics), questioning of the capabilities of IDUs who might be drug-affected or cognitively impaired to competently administer naloxone in a safe and effective manner, possible inappropriate administration by peers including distribution for malicious reasons, concerns about legal implications of naloxone prescription and possession, and increased risk-taking behavior with increased heroin use and non-ambulance attendance.

## **DISCUSSION**

Heroin overdose occurs frequently among IDUs. In our study, we ascertained IDUs attitudes to one possible response, peer naloxone administration. We found

**TABLE 3 Association of characteristics with preference for naloxone administration via the intranasal route, odds ratio and 95% CI**

Variable		Intranasal preference		
		N	%	OR (95% CI)
Age	18 to 35 years	40	78.4	
	36 to 49 years	30	68.2	0.59 (0.23–1.48)
Gender	Male	50	72.5	
	Female	20	76.9	1.27 (0.44–3.63)
Site	1	31	83.8	
	2	20	60.6	0.29 (0.10–0.91)
	3	19	76.0	0.61 (0.17–2.18)
Accommodation	Lives alone	24	75.0	
	Lives with other	36	70.6	0.80 (0.29–2.18)
	No fixed address	10	83.3	1.67 (0.29–9.27)
Education	< Year 10	25	71.4	
	Year 10 to 12	44*	74.6	1.17 (0.46–2.99)
Duration of heroin use	0.3 to 13 years	39	81.3	
	14 to 31 years	30*	65.2	0.43 (0.17–1.11)
Initiation age	7 to 19 years	38	76.0	
	20 to 45 years	32	71.1	0.78 (0.31–1.94)
Frequency of use	At least daily	29	70.7	
	Less than daily	41	75.9	1.31 (0.52–3.27)
Inject at home	Yes	47	70.2	
	No	23	82.1	1.96 (0.65–5.88)
Inject alone	Yes	56	71.8	
	No	14	82.4	1.83 (0.48–7.00)
Previous overdose	Yes	43	74.1	
	No	27	72.9	0.94 (0.17–5.13)

\* Response not obtained for 1 case

widespread support for this initiative among respondents, most of whom were keen to participate in a training program and reporting that they would have administered naloxone to a victim if it had been available at their last witnessed overdose. These findings largely replicate those of similar studies.<sup>2,6,21</sup>

It is important to note that most of our sample regarded the intranasal route as the preferred route of administration. The ease of intranasal administration, in which the need for injection is obviated and BBV risk is dramatically reduced, were commonly cited as reasons for this preference. While there have been encouraging reports<sup>22,23</sup> regarding the safety and effectiveness of intranasal naloxone in comparison to injectable forms, more evidence is required to confirm this.

In spite of overall positive comments, we found that our sample expressed some caution about peer naloxone programs that were remarkably consistent with concerns documented in previous research including issues around the legal status of naloxone possession<sup>9</sup> and possible police harassment.<sup>1,7,24</sup> The most concerning of these included a potential increased reluctance to call an ambulance after naloxone treatment for peers, anticipated by 62% of our sample. To our knowledge such an effect has not been documented in relation to programs that have been implemented in other jurisdictions, but such an effect would need to be closely monitored in a

jurisdiction like Melbourne where effective programs have been established to ensure that IDU call an ambulance when required.<sup>25</sup> This is particularly important in situations where drugs other than heroin may be involved as there is evidence that more obtunded patients (e.g., alcohol affected) may require larger naloxone doses for successful resuscitation.<sup>26</sup>

Programs for naloxone distribution have two aims: to educate opiate users in the use of naloxone to reverse heroin overdose and to provide comprehensive overdose prevention and response training.<sup>13,27,28</sup> Both aspects are important to outcome. There have been favorable reports of peer overdose reversal<sup>13,27,28</sup> in addition to reports of fewer heroin deaths with distribution programs in place in North American regions.<sup>27</sup> In a pilot intervention study conducted in San Francisco, cardiopulmonary resuscitation was performed for 80% (16/20) of overdose victims,<sup>13</sup> and all overdose victims survived. There has been one reported death after peer naloxone administration, most probably related to additional co-ingestants (alcohol, cocaine, and Alprazolam).<sup>27</sup> No fatalities were reported by Sherman et al.<sup>28</sup> who found that naloxone administered by peers effectively revived all victims of overdose. There were no reports of negative experiences with police who presented to overdose events. Programs to date have used injected Narcan.<sup>13,27,28</sup>

Naloxone distribution for administration to IDUs after overdose poses ethical, legal, and practical challenges that have been well documented.<sup>11,27</sup> The main legal issue concerns the provision of a drug for administration to a third party. It is not standard practice for a patient to be prescribed medication to administer to someone else. However, precedents for prescription of medications intended for peer administration have been established, including epinephrine for anaphylaxis and glucagon for hypoglycemia. In comparison, naloxone is a relatively safe drug with fewer adverse effects compared with epinephrine. Currently, in Australia naloxone is only available by prescription, which may limit access and availability.

This study was limited by the use of a relatively small convenience sample of IDUs in Melbourne. Nevertheless, the sample characteristics were similar to other studies of IDUs in Australia.<sup>1,3</sup> Generalizability to other settings cannot be assumed. Responses were by self-report which may or may not reflect what participants actually believed or would do.

## CONCLUSION

Naloxone can reduce heroin overdose mortality and morbidity among injecting drug users. Our survey showed strong support for the introduction of peer naloxone distribution, and a preference for intranasal administration in a sample of Australian IDUs. Development of a peer naloxone distribution program will require careful consideration of medico-legal issues, practicalities, and training of potential consumers.

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