

## BRIEF COMMUNICATION

# Improved response by peers after witnessed heroin overdose in Melbourne

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### Abstract

**Introduction and Aims.** In response to concerns about the prevalence of heroin-related morbidity and mortality, overdose response training programs have been implemented in Victoria, with the aim of improving outcomes after heroin overdose. The aim of this study was to examine reported overdose response by current injecting drug users (IDU) during overdose events, in comparison with previous studies. **Design and Methods.** A total of 99 IDU (median age 35 years, 72% male) were administered a questionnaire that collected information on knowledge and experience regarding recognition of heroin overdose and response. The primary outcome measure was the rate of ambulance notification and expired air resuscitation during witnessed heroin overdose. Data were analysed using descriptive statistics and univariate analysis. **Results.** Sixty participants had overdosed at least once, and 84% had witnessed an overdose. 78% recognised altered consciousness as a sign of heroin overdose, but less were aware of depressed breathing (42%) or cyanosis (61%). Reported overdose interventions included correct positioning (39%), expired air resuscitation (32%), ambulance notification (76%) and staying with the victim (87%). **Discussion and Conclusions.** Our study has found improved responses to heroin overdose during witnessed heroin overdose among current IDU, compared with earlier work. However, a lack of knowledge regarding appropriate first-aid response persists, which might improve with the development and implementation of training initiatives in this area, ranging from identification of overdose to the administration of life-saving measures. [Kerr D, Dietze P, Kelly A-M, Jolley D. Improved response by peers after witnessed heroin overdose in Melbourne. *Drug Alcohol Rev* 2009;28:327–330]

**Key words:** heroin, overdose, resuscitation, peer, drug.

### Introduction

Heroin overdoses are common among injecting drug users (IDU) [1–3]. Most deaths caused by heroin overdose do not occur immediately after injection [4,5] leaving opportunities for intervention, provided events are witnessed by others. People who have overdosed on heroin usually have respiratory depression or arrest. Appropriate response for suspected overdose includes recognition that overdose has occurred, alerting emergency medical services, performing expired air resuscitation (EAR, ‘mouth-to-mouth breathing’) and

appropriate positioning. More recently, peer administration of the opiate antagonist naloxone has shown some promise [6].

Research suggests that most IDU will witness at least one heroin overdose [7–9]. Unfortunately, previous Australian work (see Table 1) has stressed the limited responses undertaken by IDUs in response to heroin overdose, including ambulance notification (10–56%) [4,5,7,10,11] and performing EAR (9–31%) [5,7,10–12]. However, most of this Australian work is relatively dated with significant prevention efforts implemented since these times, including peer-based overdose

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**Table 1.** Response to overdose by witness

| Author, event year (Ref)   | Sample size | Region                | EAR | Ambulance notification |
|----------------------------|-------------|-----------------------|-----|------------------------|
| <b>Australian</b>          |             |                       |     |                        |
| Kerr, 2007 [current study] | 82          | Melbourne, AUS        | 33% | 76%                    |
| Darke, 1992–1996 [4]       | 953         | New South Wales, AUS  |     | 15%                    |
| Zador, 1992 [5]            | 152         | New South Wales, AUS  | 11% | 10%                    |
| Darke, 1994 [7]            | 329         | Sydney, AUS           | 29% | 56%                    |
| McGregor, 1994–1997 [10]   | 101         | South Australia, AUS  | 14% | 13%                    |
| McGregor, 1996 [11]        | 218         | Adelaide, AUS         | 31% | 36%                    |
| Dietze, 1998–2000 [12]     | 6173        | Melbourne, AUS        | 9%  |                        |
| <b>International</b>       |             |                       |     |                        |
| Bennett, 1995–1996 [13]    | 212         | Dorest, UK            | 45% | 53%                    |
| Baca, 2002 [14]            | 101         | New Mexico, USA       | 55% | 44%                    |
| Best, 2001 [15]            | 104         | Scotland, England, UK | 24% | 46%                    |
| Davidson, 1997–2000 [16]   | 709         | San Francisco, USA    | 57% | 53%                    |
| Strang, 1999 [17]          | 97          | South London, UK      | 33% | 44%                    |
| Tobin, 2002–2003 [18]      | 397         | Baltimore, USA        |     | 30%                    |
| Tracey, 2001–2004 [19]     | 1184        | New York, USA         | 12% | 68%                    |

EAR, expired air resuscitation.

response training programs and limiting police co-attendance at overdoses where ambulances are called [20,21].

This study investigated overdose knowledge, recognition and response among a sample of IDU in Melbourne. It was undertaken with a view to exploring differences between current responses to those documented in earlier Australian studies [4,5,7,10–12], as illustrated in Table 1.

## Methods

Ninety-nine injecting heroin users were recruited and interviewed between July and September 2007 at needle and syringe programs (NSP) in Melbourne. Participants had to be aged over 18 years and report having injected heroin within the previous month. They were reimbursed AU\$30 for their involvement in the study. Monash University's Standing Committee on Ethical Research in Humans approved the study.

Interviews were conducted in NSP between 09:00 h and 17:00 h on weekdays. An interviewer-administered questionnaire was used through which information on demographics, personal and witnessed overdose history, knowledge and experience regarding recognition of heroin overdose and appropriate overdose response was captured.

The questionnaire was structured in two stages. First, participants were asked for information about knowledge of heroin overdose recognition and appropriate response. Respondents were asked: 'What do you understand an overdose to be? How would you recognise if somebody had overdosed?'

A modified version of Strang's [22] description of overdose was then provided to avoid confusion between intoxication and 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.' Participants were then asked: 'Can you tell me what you would do if you witnessed someone overdose, or you found someone you suspected had overdosed?'

Second, participants were questioned about their actions during their most recent witnessed heroin overdose. Participants who reported that they did not call an ambulance were questioned about reasons for this. Respondents were also asked about participation in first-aid courses ('There are programs available in teaching users how to respond to a drug overdose. Have you ever participated in such a training program?').

Responses to open-ended questions were noted by the interviewer and later coded for analysis. Descriptive statistics were generated using Stata 8 [23]. Univariate odds ratio were generated to examine associations between first aid training and key responses to overdose (ambulance call, positioning, EAR, staying at the scene).

## Results

The majority (72%) of the sample was male, with a median age of 35 years. Median age of first heroin injection was 19 years, and median duration of heroin use was 13 years. Sixty (61%) participants reported

**Table 2.** Univariate associations between experience of prior first aid training and key heroin overdose responses

| Response (N)             | Ambulance called |                | Lateral position |                | EAR  |                | Stayed with victim |                  |
|--------------------------|------------------|----------------|------------------|----------------|------|----------------|--------------------|------------------|
|                          | %                | OR (95% CI)    | %                | OR (95% CI)    | %    | OR (95% CI)    | %                  | OR (95% CI)      |
| Prior first aid training |                  |                |                  |                |      |                |                    |                  |
| No (66)                  | 60.6             | Ref            | 31.8             | Ref            | 24.2 | Ref            | 65.2               | Ref              |
| Yes (32)                 | 68.8             | 1.4 (0.6, 3.5) | 34.4             | 1.1 (0.5, 2.8) | 34.4 | 1.6 (0.7, 4.1) | 87.5               | 3.7 (1.2, 12.0)* |

\*Statistically significant ( $P < 0.05$ ).

EAR, expired air resuscitation. OR, odds ratio.

they had ever overdosed after heroin injection, a median of three times.

Eight-three participants (84%) reported they had ever witnessed a heroin overdose, a median of 4.5 times. Approximately half of the sample (38/83, 46%) reported witnessing an overdose in the previous 6 months. The final outcome of participant's last witnessed overdose was known in 79 cases (80%), with six reported deaths.

Knowledge regarding recognition of overdose and appropriate response was variable. While 78% of participants recognised altered consciousness as a sign of heroin overdose, fewer reported depressed breathing (42%) or cyanosis (61%). The majority of the sample was aware of the importance of calling for an ambulance (92%), but less reported correct positioning (40%) and EAR (56%). Seventy-three participants (74%) reported that they would remain with a victim after witnessed overdose.

Eighty-two participants recalled events from their last witnessed overdose. Actions reported included correct positioning (39%), EAR (32%), calling for an ambulance (76%) and staying with the victim (87%).

Thirty-two (33%) respondents reported participation in an overdose response training program and this was generally associated with a greater likelihood of reported appropriate response (although only statistically significant for staying with victim, as shown in Table 2).

Reasons given for not requesting an ambulance included fear of police attendance (25%), prevented by others (10%) and believing it medically unnecessary (30%).

## Discussion

Our findings confirm that heroin overdose is a common occurrence, and that other heroin users are often present. An improvement in response to witnessed heroin overdose was observed in our study, with increased rates of ambulance notification and EAR in comparison with previous Australian studies.

Overdose recognition is the first step towards intervention. Altered consciousness was recognised as a sign of overdose very frequently by our sample (78%)—much more frequently than in previous research (34–60%) [7,11,13]. Our sample appeared less aware of other signs of overdose, such as cyanosis (61%) and depressed breathing (42%), with these signs reported at a similar frequency to earlier research [7,11,13]. Given that heroin users are likely to witness other's overdoses, and that their actions might save lives, appropriate recognition of overdose signs and symptoms by peers is crucial.

Our sample reported calling an ambulance more frequently (76%) than samples recruited in earlier Australian (10–56%) [4,5,7,10,11] and international (30–53%) [13–19] studies. This apparent improvement in understanding the importance of medical assistance for overdose response might indicate that overdose prevention initiatives implemented in Victoria have had their desired effect in improving peer response. These prevention initiatives include first-aid training by VIVAIDS, the local drug user group, and wide publication of local police policies designed to minimise co-attendance and drug law enforcement when co-attendance does occur [20,24]. Even though police co-attendance is relatively rare in Melbourne (13%) [25], it is important that heroin users believe that calling an ambulance will not result in police involvement and possible arrest. However, it is important to note that 25% of the participants who recalled not calling for an ambulance, cited fear of police involvement as the obstruction. This might in part explain the observed difference found in our study of knowledge of the importance of calling for an ambulance and actual response.

Our study found a higher rate (44%) of cited EAR response compared with earlier Australian studies (9–31%) [5,7,10–12], but within the range in overseas settings (12–57%) [13–17,19]. The first aid training undertaken by VIVAIDS and other organisations in Victoria may have had its' desired effect in improving peer response. Further research is needed in order to

better understand the direct impact of the overdose prevention initiatives undertaken in Victoria.

This study is limited by the use of a small convenience sample of IDU in Melbourne. However, the sample characteristics were similar to other studies of IDU in Australia [7,11]. Responses to questions about overdose interventions might be biased by the demand characteristics (i.e. that participants expressed what they knew was the 'right' thing to say rather than what actually happened) of the interview situation. Reliability of responses was not tested.

## Conclusion

Empowering heroin users to respond appropriately after suspected witnessed heroin overdose has the potential to reduce morbidity and mortality in community settings. Improvements in response to heroin overdose were observed in our study in comparison with previous studies; however, knowledge regarding some of the signs of serious overdose and recommended appropriate first-aid response among current injecting heroin users remains low. There is a clear need for training initiatives in this area, ranging from identification of heroin overdose to the administration of life saving measures.

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