

## **Family carers and the prevention of heroin overdose deaths: Unmet training need and overlooked intervention opportunity of resuscitation training and supply of naloxone**

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### **Abstract**

**Aim:** To assess (a) carers' experiences of witnessing overdose; (b) their training needs; and (c) their interest in receiving training in overdose management.

**Design:** Postal questionnaire distributed through consenting participating local carer group co-ordinators in England.

**Sample:** 147 carers attending local support groups for friends and families of drug users.

**Findings:** Carers were usually parents (80%); 89% were currently caring for a heroin user of whom 49% had already had an overdose (93% involving opiates). One third had witnessed heroin being used, and 31 had witnessed an overdose. For eight carers, there had already been a death from drug overdose. There was poor knowledge of how to manage an overdose. Only a quarter had received advice on overdose management (26%) and only one third knew of the opiate antagonist naloxone (33%). The majority (88%) wanted training in overdose management, especially in emergency naloxone administration (88%). Interest in training did not differ according to carer type nor previous overdose experience.

**Conclusion:** We found evidence of an extensively overlooked carer population, many of whom have already been faced with an overdose situation and yet have received minimal training. We also found high levels of interest in receiving overdose training, in particular, in emergency naloxone administration.

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## Introduction

The excess mortality of illicit drug users substantially derives from the greatly increased risk of overdose death among heroin users (Advisory Council on the Misuse of Drugs, 2000; Chamberlain & Klein, 1994; Darke, Ross, Zador, & Sunjic, 2000; Darke & Zador, 1996; Gossop, Stewart, Treacy, & Marsden, 2002; Sporer, 1999). Prompt response is crucial, to avoid death and hazards caused by prolonged hypoxia (Cami & Domingo-Salvany, 1995; Greene, Luke, & DuPont, 1973). Overdoses are frequently witnessed (Best et al., 2002; Darke, Ross, & Hall, 1996; Davidson, Ochoa, Hahn, Evans, & Moss, 2002; McGregor, Darke, Ali, & Christie, 1998; Powis et al., 1999; Strang et al., 1999), leading to proposals that drug-takers themselves should be trained in resuscitation methods and should be given home-based emergency supplies of naloxone [1] (Darke & Hall, 1997; Lenton & Hargreaves, 2000; Strang, Best, Man, Noble, & Gossop, 2000; Strang, Darke, Hall, Farrell, & Ali, 1996)—proposals now cautiously being implemented in the UK and Germany (Dettmer, Saunders, & Strang, 2001) and in the USA (Baca & Grant, 2005; Galea et al., 2006; Maxwell, Bigg, Stanczykiewicz, & Carlberg-Racich, 2006; Seal et al., 2005) but which attract controversy (Graham, McNaughton, Ireland, & Cassells, 2001). In parts of the USA, since 2005, physicians have been able to legally prescribe take-home supplies of emergency naloxone (Sporer & Kral, 2007) and in the UK the legal status of naloxone changed in 2005 to permit emergency administration of naloxone by any member of the general public (Medicines and Healthcare Products Regulatory Agency, 2005; Strang, Kelleher, Best, Mayet, & Manning, 2006). To date, consideration has only been given to peer drug users as potential non-medical resuscitators. However, might family members be an overlooked target population for training who may be positive about the offer of practical training and preparation for a feared crisis situation?

## Method

We investigated, using self-completion questionnaires distributed through nine support groups in England for families affected by drugs and alcohol, whether family members of illicit drug users had already encountered overdose situations, the extent of prior provision of training and resources to them, and the level of interest in proposed resuscitation training and home-based supply of emergency naloxone. The four-page questionnaire was formatted into two sections, the first identifying the carer's relationship to the illicit drug user and the main drug of abuse, the second pertaining to experienced overdoses and the carers' knowledge of overdose management.

Questionnaires were distributed to family members attending carer-support meetings by consenting participating local carer group co-ordinators. Individually completed questionnaires ( $n = 147$ ) were returned directly to us, in confidence, from carers attending one of nine family/carers support groups in England. Quantitative data were analysed using SPSS.

## **Results**

### *The responder sample*

Most (80%,  $n = 118$ ) were parent-carers, 8% were a partner, 7% were a sibling and the rest were other relatives/friends. The responding parent was usually the mother (90%; 106/118). Heroin (or other opiates) was identified as one of their main drugs of abuse for 86% ( $n = 126$ ). Injectable drug use was frequently reported—by 78% ( $n = 115$ ). In almost three-quarters of instances (68%; 93/137; unknown status or not applicable from 10% respondents), the person for whom they were caring was still using heroin or other opiates.

### *Intervention opportunity for carers*

We investigated past, and potential future, proximity of the family member to the emergency overdose situation. For half of the respondents, the person for whom they were caring had already experienced an overdose (51%; 72/141; missing data on 6) of which virtually all (93%; 67/72) involved opiates. Eight deaths had occurred. Recent overdoses were frequently reported—nineteen within the last year. A third of the carers (30%;  $n = 44$ ; data missing from 17) had actually witnessed heroin or opiates being used; including 31 carers who had actually witnessed an overdose.

### *Carers' knowledge and interest in training*

We also explored the extent to which carers had ever been given practical advice about how to deal with overdose, and whether they now wished to be offered training in overdose management. The vast majority (88%;  $n = 121$ ) were interested in receiving training on 'how to treat an overdose while waiting for an ambulance'. However only 26% ( $n = 38$ ) had ever been given advice about how to deal with an overdose, and only 33% ( $n = 49$ ) knew about naloxone. Most (88%; 121/137) wished to 'attend training on dealing with managing overdose and the administration of naloxone'. However substantial differences existed in the level of interest with different elements of potential training—with the greatest interest in being trained to administer emergency interim naloxone (88%; 118/134). We then examined whether this considerable interest in resuscitation training was different according to (a) whether the carer was parent (or older generation) or peer (including siblings), or (b) whether the carer knew that the user had already had an overdose, or (c) whether the carer had actually previously witnessed an overdose. No differences in levels of interest in overdose training (and also specifically in training in naloxone administration) were found in different carers or according to different previous overdose experience—see Table I.

### *Supplementary qualitative information*

Responses from a free-text section of the questionnaire gave a fuller insight into the personal experiences of the carers. In the responses from the 23 carers who

Table I. Training interests by carers: Subgroup analyses.

	Parent-carers (n = 119)	Peer-carers (n = 28)	Statistics
(a) Parent or peer?			
Mean age	53 (SD = 7.2)	35.2 (SD = 8.7)	$t = 0.39, p < 0.001$
Female?	89.9%	85.7%	$\chi^2 = 0.41, p = 0.52, ns$
Previously witnessed O/D?	18.5%	32.1%	$\chi^2 = 6.63, p = 0.08, ns$
<i>Interested in training in:</i>			
Basic life support?	55.9%	54.2%	$\chi^2 = 0.23, p = 0.88, ns$
Clearing the airway?	46.8%	50%	$\chi^2 = 0.79, p = 0.77, ns$
Checking breathing?	47.7%	45.8%	$\chi^2 = 0.29, p = 0.86, ns$
Assessing heart rate?	54.1%	50%	$\chi^2 = 0.13, p = 0.71, ns$
Recovery position?	46.4%	50%	$\chi^2 = 0.10, p = 0.74, ns$
Naloxone administration?	87.3%	91.7%	$\chi^2 = 0.36, p = 0.54, ns$
	Carer for a user with a history of OD (n = 72)	Carer for a users with no OD history (n = 69)	Statistics
(b) Carer knew that user had previously had overdose?			
<i>Interested in training in:</i>			
Basic life support?	54.4%	58.5%	$\chi^2 = 0.22, p = 0.63, ns$
Clearing the airway?	44.1%	50.8%	$\chi^2 = 0.59, p = 0.44, ns$
Checking breathing?	45.6%	50.8%	$\chi^2 = 0.35, p = 0.55, ns$
Assessing heart rate?	52.9%	55.4%	$\chi^2 = 0.08, p = 0.77, ns$
Recovery position?	44.1%	50%	$\chi^2 = 0.45, p = 0.49, ns$
Naloxone administration?	89.7%	85.9%	$\chi^2 = 0.44, p = 0.50, ns$
	Carer with experience of witnessing an OD (n = 31)	Carer without experience of witnessing an OD (n = 98)	Statistics
(c) Carer has already been present at overdose?			
<i>Interested in training in:</i>			
Basic life support?	48.4%	59.8%	$\chi^2 = 1.24, p = 0.26, ns$
Clearing the airway?	38.7%	51.5%	$\chi^2 = 1.55, p = 0.22, ns$
Checking breathing?	41.9%	51.5%	$\chi^2 = 0.86, p = 0.35, ns$
Assessing heart rate?	48.4%	56.7%	$\chi^2 = 0.65, p = 0.41, ns$
Recovery position?	38.7%	51%	$\chi^2 = 1.42, p = 0.23, ns$
Naloxone administration?	83.9%	88.7%	$\chi^2 = 0.49, p = 0.48, ns$

had witnessed an overdose, the textual descriptions graphically describe some of these crisis situations.

In response to enquiry about (a) 'What would you do?', carers reported:

I don't have any idea at all. The only thing I could do was phone for an ambulance. (parent-carer, female, aged 53)

I don't know. With my limited skills and knowledge, I would call an ambulance. (parent-carer, female, aged 48)

Nothing, because I don't know how. (parent-carer, female, aged 54)

At the moment I would panic. That's why I need training in this field. (parent-carer, female, aged 49)

Panic and phone 999. (peer-carer, female, aged 29)

And in response to enquiry about (b) 'What happened and what did you do?', carers reported:

My son died of a heroin overdose, but I couldn't get to him quick enough, the paramedics couldn't revive him. My daughter is still on drugs. (parent-carer, female, aged 49)

My husband injected heroin and went over, I phoned an ambulance, he stopped breathing, so I had to give CPR. He died three days later. (peer-carer, female, aged 46)

I heard a noise in the bathroom and found him lying there, blue, with breathing difficulties. (parent-carer, male, aged 55)

My son injected himself in our toilet, came out and then collapsed. I looked at his eyes and realized he must have used. (parent-carer, female, aged 59)

## **Discussion**

For nearly half of this responder sample of carers, their son/daughter/other had already suffered an overdose, and one in five of these carers had already witnessed such an overdose, with heroin almost always involved. Eight carers had already lost their son, daughter or partner to a fatal overdose. However, only a quarter of carers had ever received any instruction in overdose management. Our survey finds carers ill-informed, but keen to be trained. Furthermore, carers who have not yet had experience of overdoses were equally as eager to be trained.

Life-saving technology transfer has involved doctors passing on their diagnostic and intervention skills to family members of their patients. This has required special licensing of emergency medications such as adrenalin, glucagons and snake-venom antiserum as well as installation of community-located cardiac defibrillation units for use by trained members of the general public. In general, a member of the public is not permitted to administer medication parenterally, i.e. by injection, with long-standing legislation stating that: 'No one may administer a parenteral prescription-only medicine otherwise than to himself, unless he is an appropriate practitioner or is acting in accordance with the directions of an appropriate practitioner'. However a limited list of medicines are exempt from this restriction when administered for the purpose of saving life in an emergency (including adrenaline, atropine, glucagon, glucose and snake-venom antiserum), a list to which naloxone was added in 2005. Consequently, naloxone (and the other listed injectable medications) can now be administered by any member of the general public (i.e. not restricted to medical personnel) in an emergency for the purpose of saving a life (Medicines and Healthcare Products Regulatory Agency, 2005; Strang et al., 2006).

The question is sometimes asked as to how the carer can be given a supply of naloxone for use in the event of the feared potential future emergency. The answer is the same as with a patient with epilepsy, diabetes, serious allergy or any other condition where the emergency medication may need to be given by a third party (because of the incapacitating effect that requires the emergency intervention). With all of these conditions, the medication will still be prescribed to the specific patient (in this instance, the current or former heroin user) accompanied by instruction to the parent or other carer about the circumstances

and the procedures for emergency interim administration of the injection while awaiting the summoned medical care.

The content of training for carers will need to emphasize the importance of supplementing, and not replacing, existing emergency measures. The ambulance must still be called, attention must still be paid to supporting the victim's breathing, and the airway must be checked to ensure that it is clear. The qualitative responses to past and anticipated actions taken in the event of an overdose highlighted some specific training needs. These included a need to increase awareness of overdose hazard, recognition of overdose effects, and the prompt call for emergency medical care, and, if appropriate, ability to perform 'rescue breathing' and naloxone administration while awaiting the ambulance. Naloxone should be considered if the overdose victim is already unconscious or is rapidly losing consciousness and deteriorating in a way that requires urgent life-saving action before the anticipated arrival of the ambulance. The summoning of emergency medical care is particularly important as the naloxone will block the effects of the heroin (or other opiate) for between half an hour to an hour (Chamberlain & Klein, 1994; Sporer, 1999) after which there is a risk of gradual return of the overdose—although it is likely that the more severe respiratory depression of the acute heroin administration will have passed. This is probably the explanation for the lack of any reported overdose deaths in heroin users who discharge themselves from ambulances or hospital against medical advice after receiving a naloxone injection (Vilke, Buchanan, Dunford, & Chan, 1999; Vilke, Sloane, Smith, & Chan, 2003). Also all medications, particularly when given by injection, can cause unexpected untoward reactions although these are rare and a sense of perspective must be preserved when considering these possibilities against a situation where overdose death seems imminent.

The generalizability of these findings needs to be considered. Those attending carers' groups are likely to be more motivated to become skilled in overdose management than carers not attending such groups. Nonetheless, even among these carers, the data identifies a hitherto-overlooked potential intervention workforce. All previous reports of take-home naloxone have concerned peer-administered naloxone and successful reversal of opiate overdose (Baca & Grant, 2005; Dettmer et al., 2001; Galea et al., 2006; Maxwell et al., 2006; Seal et al., 2005). In light of recent legislative changes (June 2005) permitting anyone to administer emergency naloxone for the purpose of saving a life, there is now the opportunity to provide the technology (emergency naloxone with appropriate training) to the persons who will be present at the emergency situation, while they await emergency medical personnel. The above data indicate an extensive overlooked carer population who have previously received minimal training and guidance but who are actively interested in receiving overdose training, enhanced by provision of a take-home emergency naloxone supply. A pilot overdose/naloxone carer training scheme to establish acceptability, implementation and impact is now appropriate.

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## Note

- [1] Naloxone is an opiate antagonist drug, given by injection, which rapidly reverses the effects of heroin and other opiates within a few minutes, and which has been used by Accident and Emergency Departments and by some ambulance paramedics for many decades.

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