



## Knowledge of naloxone and take-home naloxone programs among a sample of people who inject drugs in Australia

Authors: Paul Dietze<sup>1</sup>, Shelley Cogger<sup>1</sup>, Dhanya Malandkar<sup>1</sup>, Anna Olsen<sup>2</sup> and Simon Lenton<sup>3</sup>

1. Burnet Institute

2. Australian National University

3. National Drug Research Institute

Medicine

National Drug and Alcohol Research Centre

### KEY FINDINGS

- Naloxone is an opioid overdose antidote that has been used safely for over 40 years
- The large majority of PWID respondents had heard about naloxone, the opioid overdose antidote
- Almost all participants reported naloxone functions correctly
- A substantial minority of the entire sample reported knowing about take home naloxone programs, and this knowledge:
  - Increased over time; but
  - Varied by jurisdiction, with knowledge highest in jurisdictions with current programs
- Reports of having received training in naloxone administration increased over time as did the relatively rare but increasing reports of naloxone administration after having been trained

### BACKGROUND

Opioid overdose remains one of the most intractable drug problems in Australia. There were at least 613 accidental opioid-related deaths in 2010. (1) Responses are available, but they are limited in their effectiveness, meaning that new approaches are required to reduce opioid-related deaths. (2)

Naloxone (often referred to as Narcan©) is a powerful opioid antagonist that has been used for the purposes of reversing the effects of opioids for over 40 years. (3) In this capacity it has a variety of applications, but the most noteworthy is when it is used to reverse opioid overdoses. In Australia, this typically happens when ambulances are called to overdose events and naloxone is administered by paramedics. It is also used by emergency staff when needed in the Emergency Department (ED). Access to naloxone varies by jurisdiction in Australia but it is generally available for use by paramedics and medical practitioners for reversing the effects of opioids. (4) Indeed, the drug has been available on prescription in Australia for many years, and was listed on the Pharmaceutical Benefits Scheme in April 2013.

Programs have been established to make naloxone more widely available so that it can be administered by people other than medical professionals. (5) Termed 'take-home' naloxone or 'peer distribution of naloxone', these programs have been established in many countries since the first published reports of programs in the mid 1990s. (6) Largely as a result of the Australian heroin 'drought' (7) Australia has been a late adopter, with this country's first take home program only commencing in 2012 in the ACT. This was soon followed by similar prescription naloxone programs in New South Wales. (8) Programs have since been established in South Australia, Western Australia and Victoria, with a fledgling program started in Queensland. The basic principle of existing programs is to provide training to potential overdose witnesses and victims on how to prevent and best to respond to overdose (typically including airway management, basic life support, calling an ambulance, naloxone administration, and monitoring the victim) and

then provide naloxone, or at least a prescription for naloxone, at the end of the training. (5, 8) The training models vary reflecting program variations seen overseas, (9, 10) however the primary target group of most programs is people who inject drugs (PWID) who use opioids. International take-home naloxone program guidelines have now been issued by the World Health Organisation. (11)

The naloxone that is now available in Australia on the Pharmaceutical Benefits Scheme is in the form of a pre-filled syringe, or Minijet®, that requires a needle to be attached to the syringe prior to use. These min-i-jets are available only in 400 microgram doses, a relatively small dose by international standards, but take-home programs often provide access to two or more doses which allows repeated dosing if needed.

### The current bulletin

As small scale take-home naloxone programs have now been operating in some Australian jurisdictions for several years, in this Bulletin we examine knowledge of these programs, and naloxone more broadly, among a sample of PWID recruited as part of the Illicit Drug Reporting System (IDRS). (12) (PWID) who use opioids are a key target group for take-home naloxone, and so the IDRS survey of PWID provides the capacity to examine these issues in this community group. To this end additional questions about naloxone and take-home naloxone programs were added to the PWID survey in 2013 and 2014. We used these questions to examine key parameters around naloxone in Australian PWID.

## METHOD

Data were drawn from the survey of PWID conducted as part of the IDRS in 2013 and 2014. Participants were PWID who injected regularly and were recruited from all capital cities of Australian states and territories, through services such as needle and syringe programs and peer-referral. Participants were administered structured questionnaires in face-to-face interviews that canvassed a broad range of topics including participant demographic characteristics, drug use patterns and perceptions of key issues such as price, purity and availability of a range of drugs. For further details see Stafford and Burns (2014). (12)

For the purposes of this Bulletin we examined a series of questions that were included in a naloxone module in the 2013 and 2014 questionnaires. Minor changes to the questions in 2014 meant that not all questions were directly comparable, as noted below. Given that the questions in 2013 explained to participants the nature of take-home naloxone programs and

their establishment in Australia, meaning that these participants left the interview informed about naloxone and programs, data from 2014 excluded cases where people had participated in the 2013 study where appropriate, as noted below.

Descriptive analyses were undertaken with stratification between 2013 and 2014 and by jurisdiction where possible. Chi-square tests were used to compare binary descriptive outcomes such as employment status between years, t-tests or non-parametric equivalents for continuous outcomes such as age. Odds ratios (ORs) and 95% confidence intervals (95% CIs) were generated through logistic regression to compare across states/territories. All analyses were undertaken using Stata 13.2.

## RESULTS

### Sample characteristics

Table 1 shows the characteristics of participants recruited for the survey of PWID who were able to answer the naloxone module in the 2013 and 2014 IDRS. The characteristics of the samples recruited for both years was similar to most samples of PWID recruited in Australia, and were largely consistent across survey years. However, the 2014 sample was less likely to report living in unstable accommodation and/or to be living in a regular relationship. The median weekly income reported in 2014 was slightly higher than 2013.

**Table 1: Demographic and heroin use characteristics of PWID survey respondents who answered the naloxone questions, 2013–2014**

Participant characteristic	2013 (N=853)	2014 (N=855)	p
Median age in years (IQR)	40 (34–47)	41 (34–48)	0.127
Male %	64	69	0.095
English spoken at home %	96	95	0.727
Australian born %	86	86	0.735
Indigenous %	17	17	0.931
Married/de facto or regular relationship %	40	35	0.029
Unstable accommodation %	24	20	0.029
Median grade at school completed (IQR)	10 (9–11)	10 (9–11)	0.266
Unemployed %	83	83	0.864
Median weekly income (IQR, n=1,679)	350 (250–425)	370 (265–445)	0.005
Currently receiving OST %	45	43	0.439

### Recent overdose related questions

Participants are asked a series of questions related to heroin and other opioid overdose in the IDRS questionnaire. Table 2 shows that most were able to answer the overdose questions, and around half of the sample reported that they had experienced a heroin overdose in the past.

**Table 2: Opioid overdose history and risk behaviours reported by IDRS PWID survey respondents, 2013-2014**

Participant characteristic	2013	2014	p
	%	%	
Used heroin	90	95	<0.001
Heroin injected most past month	41	41	0.954
Lifetime heroin OD	(n=704) 53	(n=746) 48	0.025
Heroin OD past year	(n=376) 19	(n=355) 18	0.418
Lifetime other drug OD	(n=867) 20	(n=853) 21	0.596
Other drug OD past year	(n=171) 23	(n=177) 31	0.082

### Knowledge of naloxone and naloxone programs

Table 3 shows the distribution of answers to the questionnaire items related to naloxone and naloxone training administered in the IDRS. The large majority of participants had heard of naloxone and, of these, most indicated that they believed it reversed the effects of heroin. Although only a minority reported having heard of take-home naloxone training, this figure did increase slightly ( $p=0.07$ ) from 35% to 39% between 2013 and 2014. This increase was also reflected in the number of respondents reporting having been trained which increased significantly ( $p=0.002$ ) from 7% to 12% over that time.

### Overdose response and use of naloxone:

When asked about responses at recent witnessed overdoses, most participants reported in engaging in appropriate responses that accord with accepted practice, and the frequency of these reported responses varied little between years. Of those who reported having been trained in a take home naloxone program, around one third reported having used naloxone to resuscitate someone, and the differences between years was not statistically significant. Around 5% of participants reported not calling an ambulance, for a variety of reasons, including fear of police involvement.

**Table 3: Awareness of naloxone programs reported by IDRS PWID survey respondents, 2013-2014.**

	2013 %	2014 %
<b>% Heard of Narcan / naloxone</b>	<b>(N=853)</b>	<b>(N=670) *</b>
<b>Yes</b>	<b>86</b>	<b>83</b>
<b>% Described Narcan / naloxone</b>	<b>(n=725)</b>	<b>(n=524) *</b>
No response	2	<1
Reverses heroin	80	81
To help someone start breathing	12	14
To re-establish consciousness	6	4
Other	<1	<1
<b>% Heard about Narcan / naloxone training and expansion</b>	<b>(n=849)</b>	<b>(n=662) *</b>
<b>Yes</b>	<b>35</b>	<b>39</b>
<b>No</b>	<b>65</b>	<b>61</b>
<b>% Resuscitated by someone trained in Narcan / naloxone</b>	<b>(n=585)</b>	<b>(n=539)</b>
<b>Yes</b>	<b>17</b>	<b>14</b>
<b>No</b>	<b>82</b>	<b>82</b>
<b>Unsure</b>	<b>1</b>	<b>4</b>
<b>% Completed course &amp; prescribed Narcan / naloxone?</b>	<b>(n=849)</b>	<b>(n=634)</b>
<b>Yes</b>	<b>7</b>	<b>12</b>
<b>No</b>	<b>90</b>	<b>88</b>
<b>Unsure</b>	<b>&lt;1</b>	<b>0</b>
<b>Don't know</b>	<b>2</b>	<b>0</b>

\*participants who had also taken part in the 2013 study were excluded from analysis

**Table 4: Reported overdose responses at witnessed overdoses by IDRS PWID survey respondents, 2013-2014.**

Overdose responses	Year of interview	
	2013	2014
<b>% Response at a witnessed overdose</b>	<b>(n=790)</b>	<b>(n=748)</b>
No response	<1	<1
Turn victim on side	28	35
Mouth-to-mouth CPR	33	35
Call 000	19	20
Stay with victim	15	8
Other remedies (i.e. ice shower, slap)	5	1
<b>% of PWID who used Narcan / naloxone to resuscitate someone?</b>	<b>(n=61)</b>	<b>(n=96)</b>
<b>Yes</b>	<b>28</b>	<b>37</b>
Number of people attempted to resuscitate (mean, SD)	2 (1)	3 (4)
<b>% Main reason for not calling an ambulance</b>	<b>(n=44)</b>	<b>(n=42)</b>
Fear of loss of anonymity	5	17
Don't want to be identified as a drug user	5	0
Fear of police involvement	27	21
Not necessary	23	21
Other	41	41

### Variations in knowledge across states/territories and over time

Table 5 shows that most participants reported having heard of naloxone, but there were significant variations between jurisdictions but that these differences were largely stable over time (OR=0.80, 95%CI = 0.59-1.08). Compared to respondents from NSW, fewer respondents reported having heard of naloxone in TAS, SA, WA, NT and QLD (all ORs<0.46, all 95% CIs between 0.05-0.93). There was a small but non-significant increase in the percentage correctly describing naloxone function over time (OR=2.24, 95%CI=0.81-6.19), but no significant differences between jurisdictions in the percentages describing naloxone correctly, which is unsurprising given the very high percentage of correct responses. There was an interaction between year and jurisdiction in reports of having heard about naloxone programs such that, in comparison to respondents from NSW whose responses were stable over time, respondents from Victoria showed increases between 2013 and 2014 (OR=6.00, 95% CI = 2.84-12.69), while respondents from South Australia showed a decrease over the same period (OR=0.40, 95%CI = 0.18-0.92). The other states showed little change in comparison to NSW respondents over time, with respondents from WA and ACT showing higher awareness of programs than respondents from NSW over both years (all ORs>2.31, all 95%CIs between 1.31-5.84). In contrast awareness was lower among respondents from TAS, NT and QLD than respondents from NSW over both years (all ORs>0.42, all 95%CIs between 0.18-0.75).

### Expectancies around take-home naloxone programs

Table 6 shows attitudes to take home naloxone programs reported by PWID respondents to the IDRS survey in 2014 (2013 questions differed and so only 2014 responses are shown). Most reported that they would participate in a program if available. Of those, the large majority indicated that they would carry naloxone if trained in how to use it and almost all reported that they believed that they would use it if they came across an overdose, would want a peer to use it if available, and that they would stay with someone after having administered the drug.

### CONCLUSIONS

Naloxone is a key part of Australia's response to opioid overdose, which remains a significant issue for Australian PWID. Work to expand access to naloxone has now commenced with small-scale take home naloxone programs aimed at PWID recently established and operating in most Australian jurisdictions.

**Table 5: Knowledge of naloxone and take home programs reported by IDRS PWID survey respondents by Australian states and territories, 2013-2014.**

	2013 (N=853)	2014 (N=670)
<b>% Heard of Narcan / naloxone</b>		
NSW	96	93
ACT	90	96
VIC	91	93
TAS	76	72
SA	64	61
WA	91	86
NT	89	80
QLD	85	79
<b>% Described Narcan / naloxone correctly</b>		
	(n=725)	(n=524)
NSW	97	97
ACT	99	100
VIC	100	100
TAS	93	98
SA	98	100
WA	98	100
NT	97	100
QLD	98	98
<b>% Heard about Narcan / naloxone training and expansion</b>		
	(n=853)	(n=668)
NSW	41	39
ACT	70	82
ACT	17	51
VIC	18	20
TAS	39	19
SA	62	54
WA	18	10
NT	22	31
QLD		

**Table 6: Expectancies around take-home naloxone programs reported by IDRS PWID survey respondents, 2014.**

	2014 %
Percentage who would participate in a program if naloxone training/expansion programs were available	(n=737) 69
<i>Of those who would participate, percentage who would:</i>	
• carry Narcan / naloxone if trained to use it	(n=499)* 86
• administer Narcan / naloxone at an overdose	(n=501)* 99
• want to have Narcan / naloxone given by a peer at overdose	(n=491)* 96
• stay with someone after giving Narcan / naloxone	(n=503)* 99

\* n's vary because of missing data

Knowledge of these programs appears to be increasing over time, particularly in the jurisdictions which do have active programs. Most PWID in the IDRS survey sample report an interest in take-home naloxone programs. Importantly, we have shown that program uptake has been increasing over time, along with associated reports of overdose reversals. These promising findings highlight the potential for a scale-up of take-home naloxone to contribute to the reduction of opioid overdose morbidity and mortality in Australia.

## REFERENCES

1. Roxburgh A, Burns L. Accidental drug-induced deaths due to opioids in Australia, 2010. Sydney: National Drug and Alcohol Research Centre; 2014.
2. Darke S, Hall W. Heroin overdose: research and evidence-based intervention. *Journal of urban health: bulletin of the New York Academy of Medicine.* 2003;80(2):189-200.
3. Baca CT, Grant KJ. Take-home naloxone to reduce heroin death. *Addiction.* 2005;100(12):1823-31.
4. Dietze P, Jolley D, Cvetkovski S, Cantwell K, Jacobs I, Indig D. Characteristics of non-fatal opioid overdoses attended by ambulance services in Australia. *Aust N Z J Public Health.* 2004;28(6):569-75.
5. Strang J, Bird SM, Dietze P, Gerra G, McLellan AT. Take-home emergency naloxone to prevent deaths from heroin overdose. *BMJ.* 2014;349:g6580.
6. Dettmer K, Saunders B, Strang J. Take home naloxone and the prevention of deaths from opiate overdose: two pilot schemes. *BMJ.* 2001;322(7291):895-6.
7. Dietze P, Fitzgerald J. Interpreting changes in heroin supply in Melbourne: droughts, gluts or cycles? *Drug Alcohol Review.* 2002;21(3):295-303.
8. Lenton S, Dietze P, Olsen A, Wiggins N, McDonald D, Fowle C. Working together: Expanding the availability of naloxone for peer administration to prevent opioid overdose deaths in the Australian Capital Territory and beyond. *Drug and alcohol review.* 2014.
9. Mueller SR, Walley AY, Calcaterra SL, Glanz JM, Binswanger IA. A Review of Opioid Overdose Prevention and Naloxone Prescribing: Implications for Translating Community Programming into Clinical Practice. *Substance abuse : official publication of the Association for Medical Education and Research in Substance Abuse.* 2015:0.
10. Davis CS, Ruiz S, Glynn P, Picariello G, Walley AY. Expanded access to naloxone among firefighters, police officers, and emergency medical technicians in Massachusetts. *American journal of public health.* 2014;104(8):e7-9.
11. World Health Organisation. Community management of opioid overdose. Geneva: Author; 2014.
12. Stafford J, Burns L. Australian Drug Trends 2013. Findings from the Illicit Drug Reporting System (IDRS). Sydney: NDARC, UNSW, 2014.

## MORE INFORMATION

For more detailed information on the naloxone programs available in Australia, please see the website of the Centre for Research Excellence into Injecting Drug Use: <http://creidu.edu.au/naloxone>.

### Participating researchers and research centres

A/Professor Lucy Burns, Ms Natasha Sindicich, Mrs Jennifer Stafford, Ms Kerry Butler, Ms Rachel Sutherland and Mr David McKell, National Drug and Alcohol Research Centre, University of New South Wales;

Ms Shelley Cogger and Professor Paul Dietze, Burnet Institute Victoria;

Ms Barbara de Graaff, Dr Amy Peacock and A/Professor Raimondo Bruno, School of Medicine (Psychology), University of Tasmania;

Mr James Fetherston and Professor Simon Lenton, National Drug Research Institute, Curtin University, Western Australia;

Mr Chris Moon and Ms Susan Fong, Northern Territory Department of Health; and

Dr Fairlie McIlwraith and Ms Sophie Hickey, Queensland Alcohol and Drug Research and Education Centre, and A/Professor Rosa Alati, School of Population Health, University of Queensland.

### Other acknowledgements

The people who inject drugs who participated in the 2013 and 2014 IDRS surveys

The agencies that assisted with recruitment and interviewing

The IDRS is funded by the Australian Government under the Substance Misuse Prevention and Service Improvement Grants Fund

## SUGGESTED CITATION

Dietze, P., Cogger, S., Malandkar, D., Olsen, A., & Lenton, S. (2015). Knowledge of naloxone and take-home naloxone programs among a sample of people who inject drugs in Australia. Sydney: National Drug and Alcohol Research Centre, University of New South Wales, Australia.

