Prison-based prescriptions aid Scotland's National Naloxone Programme

Bird, Sheila; McAuley, Andrew; Munro, Alison ; Hutchinson, Sharon; Taylor, Avril

Published in:
The Lancet

DOI:
10.1016/S0140-6736(17)30656-6

Publication date:
2017

Document Version
Author accepted manuscript

Prison-based prescriptions aid Scotland's National Naloxone Programme.

Sheila M. Bird[ab], Andrew McAuley[cd], Alison Munro[e], Sharon J. Hutchinson[cd], Avril Taylor[e]

[a]MRC Biostatistics Unit, CAMBRIDGE CB2 0SR

[b]Department of Mathematics and Statistics, Strathclyde University, GLASGOW G2 6QE

[c]Health Protection Scotland, Cadogan Street, GLASGOW G2 6QE

[d]Institute for Applied Health Research, Glasgow Caledonian University, GLASGOW G4 0BA

[e]School of Media, Culture and Society, University of the West of Scotland, PAISLEY PA1 2BE.

Opioid overdose is a major cause of premature mortality and life-years lost not only in Eastern Europe but in Scotland, as confirmed by the Global Burden of Disease Study 2015[1].

Scotland's opioid-related deaths averaged 400 per annum in 2006-10[2]: and 10% of them occurred in the 4-weeks after prison-release. Annually, around 30,000 clients receive methadone-substitution therapy[3], which is continued in Scottish prison custody[4].

In 2005, the opioid antagonist naloxone was added to UK's exempt list of prescription-only medicines that could be administered intramuscularly by anyone in an emergency to safe life. In January 2011, Scotland became the first country to introduce a centrally-funded, evaluated National Naloxone Programme (NNP), designed to have 80% power within 3-years to detect a 30% reduction (from 10% to 7%) in its primary outcome: the proportion of opioid-related deaths within 4-weeks aof prison-release[2]. By 2014+15 (calendar years), the primary outcome had reduced to 4%[5], a 60% reduction compared to 2006-10, see **Table 1.**

Every two years, Scotland's Needle Exchange Surveillance Initiative (NESI), which is geographically representative of Scotland's problem drug users, interviews over 2000 people who have recently injected drugs (80% of them within the past 6 months). Ethical approval for NESI was obtained from the NHS West of Scotland Research Ethics Committee. From 2011, NESI asked interviewees about the prescription of take-home naloxone in the past-year, and whether their most recent prescription was from prison[6]. The percentage of NESI respondents prescribed take-home naloxone in the past year increased from 8% in 2011/12 (financial year) through 32% in 2013/14 to 51% in 2015/16, mirroring the increased effectiveness of Scotland's NNP in 2014+2015 ($p = 0.013$), see **Table 1**.

There was, however, a significant decrease in the proportion of take-home nalxoone supplied to NESI respondents by Scottish prisons between 2013/14 and 2015/16 ($p = 0.0018$), perhaps because regional targets were set (and met) for community-based provision of take-home naloxone to 15% of the regions' problem drug users by the end of 2013/14 (rising to 30% by the end of 2015/16) and before prison-based advisory targets were introduced in 2014/15[2]. We found important heterogeneity of provision of take-home naloxone by gender, age-group, homelessness and recency of injecting with greater provision for people younger than 35 years, the homeless and those who

had injected drugs in the past 6 months, see **Table 2**; however, the proportion whose naloxone was most recently received from prison was 13% irrespective of recency of injecting.

When past-year incarceration-rate and average duration of incarceration are taken into account[6], **Table 2** shows that Scottish prisons provided take-home naloxone to 67% (95% CI: 53 to 81) of NESI's female past-year prisoner-releases but to only 39% of their male counterparts (34 to 44); and to 48% (40 to 55) of past-year NESI prisoner-releases aged less than 35 years but to only 37% (31 to 43) of their older counterparts. Community-provision in the past-year was higher for females than males, for those aged less than 35 years than for those aged 35 years or older, and higher for NESI interviewees who had been homeless in the past 6-months than for those who had not. However, community provision was noticeably low at 28% (24 to 32) for those with a history of injection drug use who had not injected in the past 6-months.

As a safeguard against increasing numbers of age-related opioid deaths, naloxone provision should be offered to older clients[3 7], including those who have not injected in the past 6-months.

References

1. GBD 2015 Mortality and Causes of Death Collaborators. Global, regional and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet* 2016; 388: 1459 – 1544.

2. Bird SM, McAuley A, Perry S, Hunter C. Effectiveness of Scotland's National Naloxone Programme for reducing opioid-related deaths: a before (2006-10) versus after (2011-13) comparison. *Addiction* 2016; 111: 883 – 891. (doi: 10.1111/add.13265).

3. Gao L, Dimitropoulou P, Robertson JR, McTaggart S, Bennie M, Bird SM. Risk-factors for methadone-specific deaths in Scotland's methadone-prescription clients between 2009 and 2013. *Drug and Alcohol Dependence* 2016; 167: 214-223 (http://dx.doi.org/10.1016/j.drugalcdep2016.08.627).

4. Bird SM, Fischbacher CM, Graham L, Fraser A. Impact of Scottish prisons' opioid substitution therapy on drugs-related deaths soon after prisoner-release. *Addiction* 2015; 110: 1617 – 1624.

5. Information Services Division Scotland. *National Naloxone Programme Scotland – Monitoring Report 2015/16*. (http://www.isdscotland.org/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/2016-10-25/2016-10-25-Naloxone-Report.pdf; accessed 25.10.2016).

6. McAuley A, Munro A, Bird SM, Hutchinson SJ, Goldberg DJ, Taylor A. Engagement in a National Naloxone Programme among people who inject drugs. *Drug and Alcohol Dependence* 2016; 162: 236-240.

7. Pierce M, Bird SM, Hickman M, Millar T. National record-linkage study of mortality for a large cohort of opiate users ascertained by drug treatment or criminal justice sources, 2005-2009. *Drug and Alcohol Dependence* 2015; 146: 17-23.

Conflicts of Interest: SMB and AMcA both served on Scotland's National Naloxone Advisory Group. SMB is also co-principal investigator for England's prison-based N-ALIVE pilot trial of naloxone-on-release. SMB holds GSK shares.

Funding: nil. However, SMB would like to thank the Isaac Newton Institute for Mathematical Sciences, Cambridge, for support and hospitality during the Probability and Statistics in Forensic Science program where work on this paper was undertaken. This program was supported by EPSRC grant no EP/K032208/1.

Periods	Number of opioid-related deaths	Observed opioid-related deaths within 4 weeks of prison release*	Financial year of NESI survey	Percentage of responders who had been in prison in the past year (%, n/N)	Mean length of incarceration (weeks)	Percentage of responders who had been prescribed take-home naloxone in the past year (%, n/N)	Percentage of those prescribed naloxone in the past year who received it most recently from prison (%, n/N)
2006–10 (5 years)	1970	193 (9·8%; 8·5–11·1)	2011/12	17% (367/2154)	5·0	8% (175/2146)	16% (27/ 168)
2011–13 (3 years)	1212	76 (6·3%; 4·9– 7·6)	2013/14	20% (458/2342)	5·4	32% (745/2331)	19% (138/ 732)
2014–15 (2 years)	942	37 (3·9%; 2·7– 5·2)	2015/16	17% (448/2696)	5·0	51% (1383/2696)	13% (186/1383)

Table 1: **Primary effectiveness of Scotland's NNP in reducing opioid-related deaths with a 4-week antecedent of prison release and increasing past-year prescriptions of take-home naloxone to people who inject drugs**

Periods given span 5 calendar-years before and after start of Scotland's continuing National Naloxone Programme (NNP). Information on past-year prescriptions obtained from NESI surveys done approximately 1 year after analysed period. NESI=Needle Exchange Surveillance Initiative. *Data are n (%; 95% CI).

Table 2: Heterogeneity in past-year prescribing of take-home naloxone, to whom and whether in the community or prison-based: by gender, age-group, homelessness in the past 6-months, injecting in the past 6-months.

Needle Exchange Surveillance Initiative (NESI) study, 2015/16	**NESI-estimated annual rate of naloxone-provision: per prison-release and per community-year[5]**		**Percentage of responders who had been in prison past year, %** (x/N)	**Mean length of incarceration in months**	**Percentage of responders who had been prescribed take-home naloxone in the past year? %** (x/N)	**Percentage of those prescribed naloxone in the past year who received it most recently from prison? %** (x/N)
	Prison, p	**Community, c**				
GENDER			95% confidence interval for difference		**-8.0% to 0.3%**	**6.1% to 12.9%**
Male	39%	46%	**21%** (405/1910)	4.9	**50%** (954/1898)	**16%** (157/ 954)
Female	67%	52%	**6%** (43/ 769)	5.6	**54%** (417/ 768)	**7%** (29/ 417)
AGE-GROUP			95% confidence interval for difference		**9.6% to 18.0%**	**3.5% to 11.8%**
< 35 years	48%	55%	**23%** (178/ 770)	5.1	**61%** (466/ 768)	**18%** (84/ 466)
35+ years	37%	43%	**13%** (234/1748)	5.0	**47%** (813/1737)	**10%** (85/ 813)
HOMELESSNESS in past 6-months			95% confidence interval for difference		**6.0% to 15.6%**	**9.2% to 19.5%**
Yes	46%	55%	**34%** (197/ 584)	5.7	**62%** (355/ 577)	**25%** (90/ 355)
No	41%	46%	**14%** (187/1363)	4.2	**51%** (689/1359)	**11%** (76/ 689)
INJECTING in past 6-months			95% confidence interval for difference		**20.7% to 29.9%**	**-7.4% to 4.6%**
Yes, in past 6-months	43%	52%	**18%** (388/2207)	4.9	**56%** (1233/2196)	**13%** (164/1233)
Ever, but **not** past 6-months	37%	28%	**12%** (60/ 487)	5.5	**31%** (149/ 486)	**15%** (22/ 149)