

Suicide risk among recently released prisoners in New South Wales, Australia

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Every year in Australia, thousands of people are released from prisons back into the community. Histories of mental illness and substance misuse, combined with the stigma associated with incarceration, hamper their reintegration into society.

A number of studies have reported a high mortality rate in former prisoners after their release from prison.¹⁻⁶ Studies of mortality among newly released prisoners tend to focus on a return to drug use and the concomitant risk of drug overdose. Two recent studies, conducted in the United States⁶ and the United Kingdom,⁷ have found an elevated risk of suicide during the first few weeks after release from prison. These findings have not been confirmed in Australia.

We previously demonstrated that suicide rates in inmates released from New South Wales prisons were much higher than for the general population (standardised mortality ratio, 4.8 in men and 12.5 in women).⁸ Here, we investigate specifically whether the first few weeks after release from NSW prisons are associated with an increased risk of suicide or drug overdose.

METHODS

Data sources

The database used in this study was prepared by the NSW Department of Corrective Services from their electronic records, and contained demographic and criminological information on all adults in full-time custody in NSW between 1 January 1988 and 31 December 2002. Where applicable, admission dates to the prison psychiatric hospital were also included.

This database was linked to the Australian National Death Index to obtain information on deaths of inmates. Probabilistic linkage was undertaken based on names (including aliases), date of birth, and sex, using Integrity software (version 3.6; Ascential Software, Boston, Mass, USA). Cause of death was coded according to the International Classification of Diseases — ICD-9 (pre-1997) and ICD-10 (post-1997). For suicide, we included ICD-9 codes E950–E959 and ICD-10 codes X60–X84. For drug-related deaths, the Australian Bureau of Statistics classification was used.⁹

ABSTRACT

Objective: To determine the risk of suicide and drug overdose death among recently released prisoners.

Design, setting and participants: Retrospective cohort study of 85 203 adult offenders who had spent some time in full-time custody in prisons in New South Wales between 1 January 1988 and 31 December 2002.

Main outcome measures: Association between time after release and risk of suicide and overdose death.

Results: Of 844 suicides (795 men, 49 women), 724 (86%) occurred after release. Men had a higher rate of suicide than women both in prison (129 v 56 per 100 000 person-years) and after release (135 v 82 per 100 000 person-years). The suicide rate in men in the 2 weeks after release was 3.87 (95% CI, 2.26–6.65) times higher than the rate after 6 months. Male prisoners admitted to the prison psychiatric hospital had a threefold higher risk than non-admitted men both in prison and after release. No suicides among women were observed in the 2 weeks after release. No increased risk of suicide was observed among Aboriginal Australians in the first 2 weeks after release. Of 1674 deaths due to overdose, 1627 (97%) occurred after release. Drug-related mortality in men was 9.30 (95% CI, 7.80–11.10) times higher, and in women was 6.42 (95% CI, 3.88–10.62) times higher, in the 2 weeks after release than after 6 months.

Conclusions: Prisoners are at a heightened risk of suicide and overdose death in the immediate post-release period. After 6 months post-release, the suicide rate approaches the rate observed in custody.

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Ethics approval was granted by the ethics committees of Justice Health, the NSW Department of Corrective Services, the University of New South Wales, and the Australian Institute of Health and Welfare.

Statistical analysis

We calculated incidence rates of suicide and drug overdose deaths in prison and for each period of interest after release by dividing the number of suicides and overdose deaths by the total number of person-years. Person-years at risk were calculated as the time from date of entry into prison to the earlier of the date of death or 31 December 2002. To control for re-entry into prison, the time at liberty ceased at the earlier of the date of death or the date of next reincarceration.

We used a negative binomial regression model to analyse the association between time periods after release with the rate of suicide and overdose deaths. Age, country of birth, most serious offence type, admission to the prison psychiatric hospital, number of previous imprisonments, and length of last imprisonment were examined as potential confounders. Age, number of previous

imprisonments, and length of last imprisonment were treated as time-dependent variables. Offences were classified using the Australian Standard Offence Classification.¹⁰ Admission to the prison psychiatric hospital was coded dichotomously, indicating whether or not the person had been hospitalised. *P* values and 95% confidence intervals were based on Wald's test. Statistical analyses were performed using Stata, version 8.0 (StataCorp, College Station, Tex, USA).

RESULTS

Data from 76 376 men with 188 510 releases and 8820 women with 21 857 releases were analysed. Seven men were excluded from the analysis as they were discharged from prison on compassionate grounds due to terminal illness and died subsequently in the community (including two from suicide). Sixty-eight per cent of the cohort were born in Australia; 40% were younger than 25 years at the time of first imprisonment; and a small proportion (3919 men [5%]; 108 women [1%]) had been admitted at least once to the prison psychiatric hospital. The mean follow-up period was 7.7 years (SD, 4.5 years; range, 1 day – 15 years).

1 Number of deaths, person-years, and crude and adjusted relative risks (95% CI)* of death due to suicide and overdose in prison and during time periods after release among 76 376 men, New South Wales, 1988–2002

	In prison		Weeks 1–2		Weeks 3–8		Weeks 9–26		> 6 months	
	Deaths (PY)	RR (95% CI)	Deaths (PY)	RR (95% CI)	Deaths (PY)	RR (95% CI)	Deaths (PY)	RR (95% CI)	Deaths (PY)	RR
Suicide										
Crude	117 (90467)	1.16 (0.92–1.46)	33 (6504)	4.34 (3.04–6.20)	41 (17992)	1.95 (1.41–2.69)	95 (45398)	1.79 (1.43–2.25)	509 (431104)	1.00
Adjusted [†]		0.88 (0.64–1.21)		3.87 (2.26–6.65)		1.50 (0.89–2.53)		1.59 (1.14–2.22)		1.00
Adjusted [‡] (age group)										
18–19 years	11 (3971)	3.09 (0.69–13.96)	1 (4987)	2.31 (0.21–25.52)	2 (1253)	1.84 (0.26–13.10)	9 (2437)	4.29 (0.93–19.85)	2 (2316)	1.00
20–24 years	29 (20397)	1.15 (0.74–1.79)	9 (1752)	4.33 (2.15–8.72)	8 (4820)	1.41 (0.67–2.94)	15 (11933)	1.07 (0.61–1.89)	60 (51609)	1.00
25–34 years	45 (36054)	0.88 (0.64–1.22)	14 (2631)	3.87 (2.26–6.5)	15 (7311)	1.50 (0.89–2.53)	40 (18590)	1.59 (1.14–2.22)	236 (176303)	1.00
35–44 years	14 (18976)	0.58 (0.34–1.01)	4 (1142)	2.75 (1.02–7.42)	10 (3230)	2.45 (1.29–4.64)	20 (8614)	1.85 (1.16–2.95)	153 (123851)	1.00
≥45 years	18 (11069)	2.14 (1.26–3.65)	5 (482)	13.38 (5.37–33.37)	6 (1378)	5.65 (2.44–13.09)	11 (3824)	3.77 (1.98–7.19)	58 (77025)	1.00
Drug overdose death										
Crude	46 (90467)	0.22 (0.15–0.31)	158 (6504)	10.79 (8.94–13.01)	120 (17992)	3.01 (2.44–3.70)	207 (45398)	1.99 (1.67–2.36)	946 (431104)	1.00
Adjusted [§]		0.32 (0.24–0.44)		9.30 (7.80–11.10)		2.60 (2.13–3.16)		1.83 (1.56–2.14)		1.00

PY = person-years. RR = relative risk. * Relative to death after 6 months. † Adjusted for country of birth, admission to prison psychiatric hospital, offence type and the interaction between age and different time periods (prison and after release). ‡ Adjusted for country of birth, admission to prison psychiatric hospital, and offence type. § Adjusted for age, country of birth, admission to prison psychiatric hospital, offence type and number of imprisonments. ◆

2 Number of deaths, person-years, and crude and adjusted relative risks (95% CI)* of death due to suicide and overdose in prison and during time periods after release among 8820 women, New South Wales, 1988–2002

	In prison		Weeks 1–2		Weeks 3–8		Weeks 9–26		> 6 months	
	Deaths (PY)	RR (95% CI)	Deaths (PY)	RR (95% CI)	Deaths (PY)	RR (95% CI)	Deaths (PY)	RR (95% CI)	Deaths (PY)	RR
Suicide										
Crude [†]	3 (5364)	0.80 (0.24–2.59)	0 (771)	—	2 (2105)	1.35 (0.32–5.62)	10 (5147)	2.76 (1.36–5.59)	34 (48331)	1.00
Drug overdose death										
Crude	1 (5364)	0.07 (0.01–0.52)	19 (771)	9.60 (5.92–15.56)	19 (2105)	3.52 (2.17–5.70)	34 (5147)	2.57 (1.76–3.76)	124 (48331)	1.00
Adjusted [‡]		0.09 (0.01–0.62)		6.42 (3.88–10.62)		2.42 (1.47–4.00)		1.88 (1.27–2.80)		1.00

PY = person-years. RR = relative risk. * Relative to death after 6 months. † None of the covariates had a $P < 0.05$ in the univariate analysis and therefore adjusted analysis was not carried out for women. ‡ Adjusted for age, country of birth, and number of imprisonments. ◆

Suicide

There were 5130 deaths (4707 men, 423 women) in the study population between 1988 and 2002, including 795 suicides (16.9%) in men and 49 suicides (11.6%) in women. Eighty-five per cent (678/795) of suicides in men and 94% (46/49) of those in women occurred after release from prison. The mean (SD) age at death from suicide was 33.6 (9.6) years for men and 33.5 (9.8) years for women. Overall, men had higher rates of suicide than women during incarceration

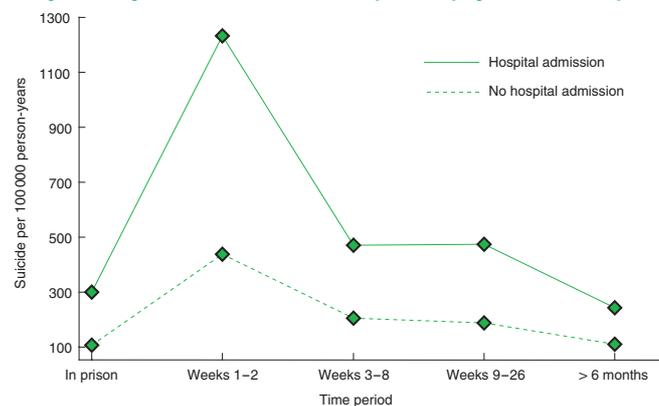
(129 v 56 per 100 000 person-years) and after release (135 v 82 per 100 000 person-years).

Hanging (339/678 men [50%]; 16/46 women [35%]) and self-poisoning (197/678 men [29%]; 24/46 women [52%]) were the most common methods of suicide after release. During incarceration, hanging was implicated in 94% of suicides (110/117) in men and all of the female suicides.

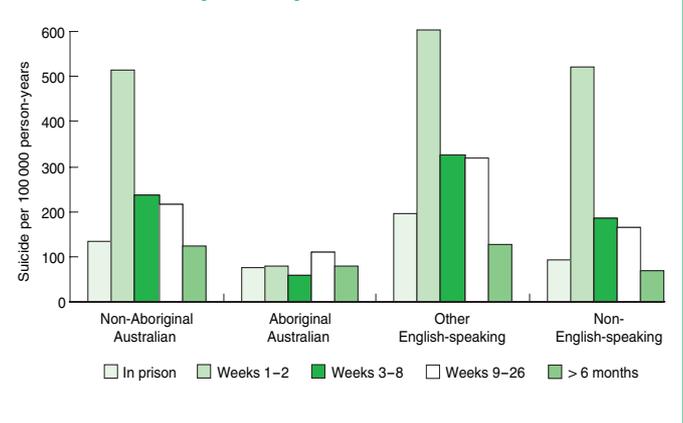
Suicide peaked in men during the first 2 weeks after release at a rate of 507 per

100 000 person-years, declining to 118 per 100 000 person-years after 6 months (adjusted relative risk, 3.87; 95% CI, 2.26–6.65) (Box 1). In men, the association between time after release and suicide was not uniform among different age groups. The highest increased risk in the first 2 weeks after release was for those aged 45 years or older (adjusted relative risk, 13.38; 95% CI, 5.37–33.37). The excess risk was reduced during subsequent weeks but remained significant for those aged 35 years or older. No

3 Rates of suicide among men in prison and after release by history of admission to the prison psychiatric hospital



4 Rates of suicide among men and women in prison and after release by country of birth



suicides occurred among women in the first 2 weeks after release (Box 2).

Men admitted to the prison psychiatric hospital had a more pronounced pattern, with a rate of suicide in the first 2 weeks after release of 1234 per 100 000 person-years, compared with 438 per 100 000 person-years in those with no admission history (Box 3). Aboriginal Australians had a lower risk of death from suicide than other prisoners, and their rate of suicide did not increase in the immediate post-release period (Box 4).

Drug-related deaths

After release, there were 1431 drug-related deaths in men and 196 in women, giving mortality rates of 286 and 348 per 100 000 person-years, respectively. The mean (SD) age at death from overdose was 33.0 (7.7) years for men and 30.6 (7.2) years for women. In men and women, 58% of all drug-related deaths were classified as being caused by "mental and behavioural disorders" due to psychoactive substance use and misuse of non-dependence-producing substances. The adjusted relative risk of fatal drug overdose in the first 2 weeks after release, compared with the risk after 6 months, was 9.30 (95% CI, 7.80–11.10) in men (Box 1) and 6.42 (95% CI, 3.88–10.62) in women (Box 2).

DISCUSSION

We have found that men, notably those who had been admitted to the prison psychiatric hospital, are at an increased risk of death from suicide in the period immediately following release from prison in NSW. We also found that ex-prisoners' risk of overdose was nine times higher in men and six times higher in women during the first 2 weeks compared with the risk after 6 months. This corroborates previous post-release studies from other

countries, which have focused on death from overdose and found the risk of death in the first 2 weeks to be seven to 11 times higher than in other periods at liberty.^{6,11-15} Suicide has received far less attention in previous studies, but we found it poses a risk of death in men four times higher in the first 2 weeks after release than in the period beyond 6 months after release.

Suicides in prison receive considerable attention from prison authorities. Programs, policies, and even architectural considerations are in place to minimise the risk of suicide during incarceration.^{16,17} In contrast, far less attention is paid to the post-release period, when the duty of care shifts from the custodial authorities to the community. Release from prison may not increase the overall risk of suicide compared with being in prison, but the first few weeks after release are a period of intensified risk.

Our findings suggest that the initial adjustment period after release is a time of extreme vulnerability, particularly for men. It is possible that on return to the community, historical variables associated with suicide such as hopelessness, significant loss, social isolation, lack of support, and poor coping skills^{18,19} are especially significant for this group, as a considerable number of them are already predisposed to suicide because of mental illness and/or substance misuse.²⁰⁻²²

Our results support the two previous studies conducted outside Australia that documented a clustering of suicide soon after release.^{6,7} In the American study, the risk of suicide within the first 2 weeks after release was over four times greater than that observed during other periods.⁶ In the British study, over one-fifth of all suicides occurring within 1 year of release from prison took place within 4 weeks of release.⁷

We found that women did not have an increased risk of suicide in the first 2 weeks after release, which may be due to better family ties and supports. Research suggests that most women prisoners report having children^{22,23} and, unlike their incarcerated male counterparts, report being the primary carers before incarceration, with many expecting to resume this role on release.²³ Klein et al report that family relationships are an important factor in determining the success or failure of prisoners in adjusting to life after release.²⁴

We found no increased risk of suicide in recently released Aboriginal Australian prisoners. It is possible that Aboriginal people have better community support after release, which may be protective against suicide. The lower rate of suicide among Aboriginal prisoners supports the findings from an earlier study that investigated deaths in custody,²⁵ but contradicts a recent study of mortality among released prisoners in Western Australia.⁴

The threefold higher risk of suicide both in prison and after release among men admitted to the prison psychiatric hospital compared with those who were not is particularly worrying. We acknowledge that admission per se is an imprecise measure of psychiatric illness. Resource limitations for inpatient prisoner mental illness care dictate that only the most severe cases receive hospital psychiatric care in prison. In 2002 in NSW, there were less than 100 psychiatric beds for an estimated 500 seriously ill prisoners.²⁶ A recent editorial²⁷ highlighted the poor provision of health care for mentally ill prisoners and called on policymakers and politicians to improve and expand prison mental health services, court diversion programs, and community forensic mental health services, as well as to provide access to stable housing and appropriate vocational rehabilitation

services after release, as part of extended mental health services in Australia.²⁸

The increased risk of death from drug overdose directly after prisoners are released is likely due to a reduced tolerance to opioid drugs following prolonged abstinence or infrequent use while in prison. Studies have demonstrated that methadone maintenance treatment reduces overdose mortality in opiate injectors in the community.^{29,30} Since 1987, NSW prisoners have been able to access methadone while in prison and before release. In this study, we could not ascertain whether or not a person was on methadone in prison. However, the high rate of drug-related deaths among the cohort after release suggests it is unlikely that a large proportion of inmates with substance misuse problems had received treatment while in prison. There is a need to expand pharmacotherapy programs in the pre-release period, especially for those with both mental illness and opioid dependence. Previous studies on post-release overdose deaths concluded that investment in prison-based interventions (eg, distribution of naloxone) is needed to reduce drug-related deaths in recently released prisoners.^{11,13}

The main strength of this study is the large sample size and the use of person-years at risk, which is often absent from similar studies. We previously reported 93.8% sensitivity and 98.1% specificity for the National Death Index in identifying suicide deaths among our cohort.³¹ Based on this, our estimates are probably a slight overestimation of the actual suicide rate. On the other hand, we did not include deaths of "undetermined" cause in our analysis. It has been suggested that these deaths are often suicide, but due to conservative coding practices are coded as undetermined.³²

Similarities between prisoner populations in terms of health and socioeconomic characteristics should make our findings generalisable to other jurisdictions. However, we cannot be certain that our findings are directly generalisable to jurisdictions that have established effective transitional and post-release programs for prisoners or those that do not offer pharmacotherapies to pre-release prisoners.

Our study has found that suicide and drug overdoses are frequent causes of death in the period immediately following release from prison. The shift in responsibility for prisoners from prison health authorities to the community is rarely formalised, and these people often return to the community with few supports in place. Without adequate measures to ensure that responsibility for care flows seamlessly from the prison to the

community, despair and death among these people will likely continue unabated.

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COMPETING INTERESTS

None identified.

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