IJPH
International Journal of Prisoner Health
6(1):26-32

Drug-Related Deaths Among Recently Released Prisoners in Ireland, 1998 to 2005

Suzi Lyons[1], Simone Walsh[1], Ena Lynn[1], Jean Long[1]

Keywords: prisoners, recently released, drug-related deaths, Ireland

ABSTRACT

The aim of this study was to investigate deaths following release from prison among individuals recorded on the National Drug-Related Deaths Index (NDRDI). A descriptive analysis of individuals with a history of imprisonment in the NDRDI from 1998 to 2005 was undertaken. Between 1998 and 2005, 130 (5.3%) of the recorded cases had a documented history of imprisonment, 105 of whom were not in prison at the time of their death. Of these 105, 89% were male, 62% were aged between 20 and 29 years, 84% were unemployed, and 10% were homeless. Almost two thirds (61%) had a history of injecting drug use, and 34% were reported to be injecting at the time of their death. Almost one third (28.1%) of the deaths occurred within the first week of release from prison, with a further 18% in the first month. Opiates were implicated in 89% of all poisonings in the first month after release from prison. Additionally, 62% of these poisonings involved polysubstance use. The study highlights the need for more intensive prevention measures in the period immediately following release from Irish prisons, including the development of a national overdose prevention strategy.

INTRODUCTION

Research in Australia (Karimina et al, 2007), Denmark (Christensen et al, 2006), England (Farrell & Marsden, 2007), Scotland (Bird & Hutchinson, 2003; Seaman et al, 1998; Seymour et al, 2000) and the United States (Binswanger et al, 2007), has found evidence of an increased risk of mortality among prisoners in the days and weeks immediately following their release from prison. The majority of these deaths are drug related, and frequently caused by an overdose. One reason suggested for the increased mortality in this group is that imprisonment alters an individual's tolerance of drugs, possibly because of curtailed drug use while in prison, leaving them at an increased risk of overdose on release (Jones et al, 2002; Seymour et al, 2000; Singleton et al, 2003). To date in Ireland, few studies have examined this relationship. Between 1998 and 2001, a review of 342 opiate-related deaths in Dublin coroners' records found that 13% had a history of imprisonment (Byrne, 2002). This paper investigates the time interval between date of release and date of death in deceased individuals with a documented history of imprisonment, using data from the Irish special register for drug-related deaths, the National Drug-Related Deaths Index (NDRDI), for the years 1998 to 2005.

METHODS

The NDRDI is an epidemiological database which records all deaths by drug and/or alcohol poisoning, and deaths among drug and problem alcohol users in Ireland. To ensure completeness, data from several sources are collected: the General Mortality Register (GMR), coroners' records, acute hospital records (via the Hospital In-Patient Enquiry (HIPE) scheme) and the national methadone treatment register (the Central Treatment List [CTL]). Data collection from the community via the Family Support Network, a community organisation, is still in its pilot phase and did not contribute to this round of analy-

1. Health Research Board, Dublin, Ireland.

Address correspondence to: Suzi Lyons, Health Research Board, 42-47 Knockmaun House, Lower Mount Street, Dublin 2, Ireland. Phone: +353 1 2345163; Email: slyons@hrb.ie

HUMANITAS
ISSN 1744-9200 print/ISSN 1744-9219 online

DOI: 10.1080/17449200802692086

sis. Data are collected retrospectively (Lyons et al, 2008), and include: demographic details; socioeconomic information (including imprisonment history); history of problem drug and alcohol use; risk behaviours (e.g., injecting drug use); and medical diagnosis, including blood-borne viral infection status; drug or alcohol treatment history; and details about the death itself. Cases are matched across the different data sources to avoid duplication; the matching criteria used were initials, date of birth, gender, place of residence, and date of death. History of imprisonment, if documented, is collected from coroners' records. Where possible, the date of release from an Irish prison or the date of death (if in prison at time of death) is verified by the Irish Prison Service.

The NDRDI includes cases that meet the criteria of a directly drug-related death (i.e., poisoning due to the toxic effects of drug or substance consumption). For the purposes of this paper, this type of death is referred to as a poisoning. The index also includes cases that have a recorded history of drug dependence or a history of non-dependent abuse of drugs. For the purposes of this paper, this type of death is referred to as a "non-poisoning" death.

Deaths due to alcohol poisoning alone or deaths among problem alcohol users who were not drug users were not included in this analysis as these cases were not recorded on the NDRDI before 2004.

The NDRDI has ethical approval from the Health Research Boards Ethics Committee and the acute hospitals participating in HIPE and in this exercise. The NDRDI has permission from the CTL, the GMR, and the Coroner Service to collect these data.

Data were entered into a secure and encrypted Microsoft Access database and when matched and exported were anonymized and analyzed using SPSS version 15. A descriptive analysis was conducted and the Pearson χ^2 test was used to compare proportions in independent groups of categorical data.

RESULTS

Profile of Individuals Released from Prison

Between 1998 and 2005, 2442 drug-related deaths were recorded on the NDRDI, of which 130 (5.3%) were of people who had a documented history of imprisonment. Of these 130 individuals, 93 (71.5%) had been released from prison, 25 (19.2%) were in prison, and 12 (9.2%) were on temporary release at the time of their death.

This analysis will focus on the 105 individuals who were not in prison at the time of their death (Table 1). The majority were male (88.6%), and most were aged between 20 and 29 years (median age 26 years). At the time of death the vast majority (83.8%) were unemployed, 20% were living in unstable accommodation, and 10% were homeless. Almost all (97.1%) had a history of drug misuse or drug dependence; 32 individuals were on the methadone treatment register at the time of death (CTL). Almost two thirds had a documented history of injecting drug use, and one third was reported to be injecting at the time of their death. Only 11 (10.5%) had a documented history of blood-borne viral infection, of whom five were co-infected with two or more viruses and eight had a documented history of injecting drug use.

These 105 individuals were compared with the other cases on the database who had no documented history of imprisonment (n = 2312). There were many differences observed between the two groups for the variables examined (Table 1). Those with no documented history of imprisonment were older, had significantly lower rates of unemployment, homelessness, drug dependency/abuse, and were less likely to have a history of injecting drug use and blood-borne viral infection.

Time Between Release from Prison and Death

Date of release from prison could not be confirmed for 16 individuals. Of the 89 cases with a known date of release, nine (10.1%) died on the first or second day of release, and a further 16 (18.0%) in the first three to seven days (mode 1 day) (Figure 1). Overall, 63 deaths (70.8%) were poisonings.

Almost a third of all deaths (25, 28.1%) occurred within the first week of release, and a further 17 (19.1%) by the end of the first month. The characteristics of the deaths that occurred in the first month (n = 42) were further explored (Table 2).

Deaths within the first month of release

Of the 42 individuals who died in the first month, 10 (23.8%) were on temporary release from prison. These individuals comprised the vast majority of all those who were on tempo-

FIGURE 1 | Time between release from prison and death (N = 89)

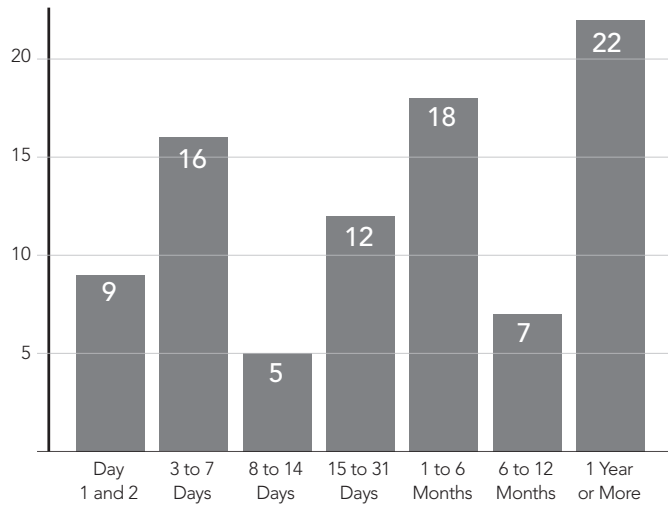

TABLE 1 | Comparison of characteristics of individuals released from prison at time of death with individuals with no documented history of imprisonment

Characteristics	Released from prison	No documented history of imprisonment	Chi square
	N = 105	N = 2312	
Male	93 (88.6)	1670 (72.2)	13.6 df 1 p >0.000
Female	12 (11.4)	642 (27.8)	
Age at time of death			
≤24 years	36 (34.3)	532 (23.0)	50.8 df 5 p = 0.0001
25–29 years	33 (31.4)	333 (14.4)	
30–34 years	20 (19.0)	324 (14.0)	
35–39 years	6 (5.7)	316 (13.7)	
40–44 years	5 (4.8)	254 (11.0)	
45+ years	5 (4.8)	552 (23.9)	
Median age	26 years	34 years	
Type of death			
Poisoning	70 (66.7)	1473 (63.7)	0.38 df 1 p = 0.5
Non-poisoning	35 (33.3)	839 (36.3)	
Employment status before death			
Unemployed	88 (83.8)	849 (36.7)	93.9 df 2 p >0.0001
In paid employment	5 (4.8)	492 (21.3)	
Unknown/not recorded	12 (11.4)	971 (42.0)	
Type of accommodation before death			
Stable	58 (55.2)	1564 (67.6)	88.7 df 3 p >0.001
Unstable[1]	21 (20.0)	74 (3.2)	
Homeless	10 (9.5)	80 (3.5)	
Not known/other	16 (15.2)	594 (26.0)	
Mention of drug misuse/ dependency	102 (97.1)	1472 (63.7)	49.6 df 1 p >0.0001
History of ever having injected	64 (61.0)	490 (21.2)	89.9 df 1 p >0.0001
Injecting at time of death	36 (34.3)	278 (12.0)	44.0 df 1 p >0.0001
Infection with a blood- borne virus[2]	11 (10.5)	93 (4.0)	10.2 df 1 p = 0.001
Location where death occurred			
Private dwelling	52 (49.5)	1287 (55.7)	22.9 df 4 p >0.0001
Public place/building	28 (29.7)	488 (21.1)	
Hospital	15 (14.3)	112 (4.8)	
Other	10 (9.5)	101 (4.3)	

1.This includes temporary living arrangements (e.g., living with friends on a temporary basis without paying rent). 2. Hepatitis B or C virus or HIV

TABLE 2 | Profile of individuals who died within one month (31 days) of release from prison, by number of days between release and death (N = 42)

	Days 1 to 2 N = 9	Days 3 to 7 N = 16	Days 8 to 31 N = 17	Total N = 42
Median age	29	26	24	25
Poisoning n (%)	9 (100.0)	13 (88.0)	16 (94.1)	38 (90.5)
Injecting at time of death n (%)	4 (44.4)	6 (37.5)	8 (47.1)	18 (42.9)
Days to death (mode)	1 day	3 days	15 days	1 day

TABLE 3 | Comparison of characteristics of individuals who died within one month (31 days) after release from prison compared to those individuals who died more than one month after release from prison

Characteristics	Died within one month N = 42	Died after one month N = 47	Chi Square
Age at time of death			
≤24 years	20 (47.6)	13 (27.7)	6.4 df 2 p = 0.04
25–29 years	10 (23.8)	23 (48.9)	
30+	12 (28.6)	11 (23.4)	
Median age	25	26	
Type of death			
Poisoning	38 (90.5)	25 (53.2)	14.9 df 1 p > 0.0001
Employment status before death			
Unemployed	35 (83.3)	41 (87.2)	0.27 df 1 p = 0.6
Type of accommodation before death			
Stable	20 (47.6)	31 (66.0)	3.5 df 2 p = 0.2
Unstable[1]/homeless	16 (38.1)	10 (21.3)	
Not known/other	6 (14.3)	6 (12.8)	
History of ever having injected	27 (64.3)	26 (55.3)	0.74 df 1 p = 0.4
Injecting at time of death	18 (42.9)	13 (27.7)	2.3 df 1 p = 0.13
Location where death occurred			
Private dwelling	23 (54.8)	27 (57.4)	2.6 df 2 p = 0.3
Public place/building	15 (35.7)	11 (23.4)	
Other/unknown	4 (9.5)	9 (19.1)	

1.This includes temporary living arrangements (e.g., living with friends on a temporary basis without paying rent).

TABLE 4 | Types of substance involved in deaths by poisoning within a month of release from prison (N = 38)

Substance	n (%)[1]
Heroin	19 (50.0)
Methadone	18 (47.4)
Benzodiazepines	11 (28.9)
Antidepressants	6 (15.8)
Stimulants[2]	7 (18.4)
Other[3]	11 (28.9)

1. Percentages in this column may not add up to 100% as individual cases may have more than one substance involved in their death.
2. Including cocaine and methamphetamines.
3. Other medication includes non-benzodiazepine sedatives, unspecified opiates and analgesics containing an opiate compound, antipsychotics, non-opiate analgesics, alcohol, solvents, cardiac and all other types of medication including over-the-counter products.

rary release (83.3%) recorded in the index. The ratio of males to females was 6:1. There were very few differences between the characteristics of those who died in the week after release and those who died up to one month post release. Small numbers in some of the variables made comparisons difficult. The vast majority (38, 90.5%) of deaths were poisonings, with many of the individuals injecting at the time of their death (Table 2). The majority (29, 69.0%) were not alone at the time of their death or at the time of the incident that precipitated their death.

There were some differences between those who died within one month of release and those who died after one month (Table 3). A higher proportion of those who died within one month were younger, almost all died from poisoning and many were injecting at the time of their death compared to those who died after one month.

Substances Involved in Deaths by Poisoning

Almost two thirds (63.2%) of deaths by poisoning within a month of release (n = 38) were attributed to two or more drugs and/or substances. An opiate (often heroin or methadone) was involved in 79% (11/14) of single-substance deaths, while opiates were involved in 96% (23/24) of polysubstance deaths.

Table 4 presents the substances involved in cases of death by poisoning within a month of release (both single and polysubstance). Heroin was involved in half (50.0%) of these cases, methadone in 47% and benzodiazepines in 29%.

The source of prescription medication, including methadone, benzodiazepines and other prescription products, was not always known and may in some cases have been illicit.

DISCUSSION

This is the first study of its kind in Ireland to examine the relationship between release from prison and drug-related death. Of those deceased individuals who had a documented history of imprisonment, almost one third died within a week of release from prison and nearly half had died within a month. These findings are consistent with international research in this area which demonstrate the increased risk of mortality in those newly released from prison (Binswanger et al, 2007; Christensen et al, 2006; Farrell & Marsden, 2007; Singleton et al, 2003). Of the deaths within the first month of release, almost all were due to poisoning, and many of those who died were injecting drugs at the time of their death. Opiates, including heroin and other opiate substances, were responsible for many of these deaths. Nationally and internationally, opiates are implicated in the majority of deaths related to illicit drug use (European Monitoring Centre for Drugs and Drug Addiction, 2008; Lyons et al, 2008) and have also been frequently implicated in deaths in recently released prisoners (Seymour et al, 2000; Singleton et al, 2003). Polysubstance use was implicated in the majority of deaths by poisoning and included both illicit and licit drugs. Benzodiazepines were implicated in almost one third of deaths by poisoning. The findings in regard to polysubstance use, including benzodiazepines are reflected in international research (Farrell & Marsden, 2007; Seymour et al, 2000; Singleton et al, 2003).

The profile of the group of individuals described in this study is very similar to that of individuals committed to Irish prisons in the period under study, including gender, average age, and also percentages of those on temporary release (Irish Prison Service, 2006). The proportion of individuals with a documented history of imprisonment is much higher among those on the NDRDI database than among the general Irish population (Irish Prison Service, 2006).

According to NDRDI data, individuals with a documented history of imprisonment had significantly higher levels of unemployment, homelessness, and drug use. Almost all had a history of drug misuse or dependence and were more likely to have a history of injecting drug use than those who had no documented history of imprisonment.

Because a history of imprisonment, where it exists, is not always recorded in the information sources supplying data to the NDRDI, the number of individuals included in this study is likely to be underestimated, which limits the scope of the study. The date of release could not be confirmed for 15% of individuals. Reasons for this include imprisonment outside the State and the difficulty of confirming dates before computerisation of the prison service system. Results for other variables are also likely to be underestimated as collection of information is not standardised for coroners' records.

The small number of women included in the study makes interpretation difficult. An Australian study found that in the period immediately after release from prison, women had a reduced risk of suicide compared to men. The authors suggested that this might have been because women were more likely than men to have existing family support and the responsibilities of child care on release (Karimina et al, 2007). However, the risk of death among released women prisoners was found to be significantly higher than that among women in the general population in a recent American study (Binswanger et al, 2007).

The increased proportions of individuals who die so soon after release from prison highlights the need for preventative measures for this at-risk group. The findings support the need for an overdose strategy in Ireland, which would detail actions necessary to deal with overdoses in the community. Such measures include ensuring the release of drug-dependant prisoners in a planned manner (Farrell & Marsden, 2007), providing continuity of methadone and other forms of drug treatment, and providing accommodation and support to enter education or employment on release from prison. Improved communication between prison services and addiction treatment and reintegration services in the community would be required in order to put these measures in place. There should also be more support and overdose awareness training for those who are released at short notice, such as on temporary release, for example due to a family emergency (Donnelley, 2007).

Service providers and families should be made aware of the increased risk of overdose among newly released prisoners. As many of those who died were with someone at the time of the incident, the targeted dissemination of basic information among drug users and their families would be a very good start in saving lives. The basic information would include the signs and symptoms of overdose and immediate actions (such as putting the person in the recovery position and calling an ambulance) following an overdose. It would also help if the police, ambulance services, and the community agreed that the ambulance service would not be hindered in their duties; this would avoid involving the local police. Any overdose strategy in Ireland should also include making naloxone (to counter the effects of an opiate overdose) more widely available in the community (Singleton et al, 2003). Providing naloxone to non-medical personnel, family members and other drug users has proven to be effective in reducing drug-related deaths in several studies in other countries (Darke et al, 2007; Green et al, 2008). Data from the NDRDI could be used to evaluate the effectiveness of such policies in the future by monitoring trends in drug-related deaths over time.

CONCLUSION

Allowing for underestimation in the data presented in this paper, it appears that a number of prisoners die within one month following release from prison and it is possible that many of these deaths could be preventable through decisive, but inexpensive action, such as improving links between appropriate services and training in overdose prevention techniques.

ACKNOWLEDGEMENTS

We would like to sincerely thank all the services that provide data for the NDRDI and the Irish Prison Service for its assistance with the NDRDI. We would also like to thank Ms. Lorraine Coleman for collecting the data, Ms. Joan Moore for editing and our colleagues in the National Documentation Centre on Drug Use for their assistance.

DECLARATION OF CONFLICTING INTERESTS

The authors declared no conflicts of interest with respect to the authorship and/or publication of this manuscript.

FUNDING

The NDRDI is funded by the Irish Department of Health and Children, and the Irish Department of Justice, Equality, and Law Reform.

REFERENCES

Binswanger I, Stern M, Deyo R, et al. Release from prison - A high risk of death for former inmates. *New Engl J Med*. 2007;356(2):157-165.

Bird SM, Hutchinson SJ. Male drugs-related deaths in the fortnight after release from prison: Scotland, 1996-99. *Addiction*. 2003;98:185-190.

Byrne R. *Opiate-Related Deaths Investigated by the Dublin City and County Coroners - 1998 to 2001*. 2002, Dublin: University of Dublin.

Christensen PB, Hammerby E, Smith E, Bird SM. Mortality among Danish drug users released from prison. *Int J Prison Health*. 2006;2(1):13-19.

Darke S, Degenhardt L, Mattick R. *Mortality Amongst Illicit Drug Users: Epidemiology, Causes and Interventions*. 2007, Cambridge: Cambridge University Press.

Donnelley R. *National Forum on Drug-Related Deaths in Scotland*. Annual Report 2007. 2007, Edinburgh: The Scottish Government.

European Monitoring Centre for Drugs and Drug Addiction. *The State of the Drugs Problem in Europe 2008*. 2008, Lisbon: EMCDDA.

Farrell M, Marsden J. Acute risk of drug-related death among newly released prisoners in England and Wales. *Addiction*. 2007;103:251-255.

Green T, Heimer R, Grau L. Distinguishing signs of opioid overdose and indication for naloxone: An evaluation of six overdose training and naloxone distribution programs in the United States. *Addiction*. 2008;103(3):979-989.

Irish Prison Service. *Annual Report 2005*. 2006, Dublin: The Stationery Office.

Jones R, Gruer L, Gilchrist G, et al. Recent contact with health and social services by drug misusers in Glasgow who died of a fatal overdose in 1999. *Addiction*. 2002;97:1517-1522.

Karimina A, Law M, Butler T, et al. Suicide risk among recently released prisoners in New South Wales, Australia. *Med J Australia*. 2007;187(7):387-390.

Lyons S, Lynn E, Walsh S, Long J. *Trends in Drug-Related Deaths and Deaths Among Drug Users in Ireland, 1998 to 2005*. 2008, Dublin: Health Research Board.

Seaman SR, Brettle RP, Gore SM. Mortality from overdose among injecting drug users recently released from prison: database linkage study. *Brit Med J*. 1998;316:426-428.

Seymour A, Oliver J, Black M. Drug-related deaths among recently released prisoners in the Strathclyde region of Scotland. *J Forensic Sci*. 2000;45(3):649-654.

Singleton N, Pendry E, Taylor C, et al. *Drug-Related Mortality Among New Released Offenders*. 2003, London: Home Office.