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Drug-related mortality among newly released offenders

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There is considerable concern about increasing rates of drug-related mortality in the UK. Evidence has suggested that recently released offenders are at a high risk of dying from drug-related causes. This study provides estimates of the rates of mortality amongst recently released prisoners in England and Wales and provides some evidence of the risk factors associated with this group. The sampling exercise was undertaken prior to the implementation of the revised prison service drug strategy which brought in a considerable expansion in the provision of treatment and support for drug misusers.

Key points

- From a sample of 12,438 prisoners discharged in June or December 1999, 79 drug-related deaths and 58 deaths from other causes were recorded in the study period up to 31 January 2001.
- There was a high rate of death from all causes in the immediate post-release period:
 - 13 deaths in the first week after release (55 deaths per thousand per annum)
 - 6 in the second week (25 deaths per thousand per annum)
 - 3 – 4 per week in the third and fourth weeks (15 deaths per thousand per annum).After this, the rate of death declined to a steady rate of about two deaths per week (between 5 and 10 deaths per thousand per annum).
- In the week following release, prisoners in the sample were about 40 times more likely to die than the general population. In this period, immediately post-release, most of these deaths (over 90%) were associated with drug-related causes.
- The age of the prisoner at the time of release was associated with the risk of death from both drug-related and other causes. Prisoners aged 25 to 39 at the time of release were most at risk.
- Of the 79 drug-related deaths, just over half (53%) were recorded as involving only one drug. A single drug with alcohol was recorded in 13% of cases, mixed drugs without alcohol in 19% and mixed drugs with alcohol in 14% of cases. In 71% of all cases, heroin/morphine were specifically mentioned either by the coroner or in the toxicology report.
- In a small group of prisoners interviewed while in prison as part of a survey of the mental health of prisoners carried out in 1997, risk factors for drug-related death included:
 - living off crime before coming to prison
 - having a small primary support group (3 people or fewer)
 - being in prison for a sex offence (main offence)
 - a history of illicit use of tranquillisers
 - use of drugs in the months before coming to prison.

The views expressed in these findings are those of the authors, not necessarily those of the Home Office (nor do they reflect Government policy)

Mortality rates

From a sample of 12,438 prisoners discharged in England and Wales during either June or December 1999, 137 deaths were recorded in the study period up to 31 January 2001. Of these, 79 were drug-related and 58 were from other causes. The mortality rates for the year after release from prison were 5.2 per thousand per annum for mortality from drug-related causes and 3.8 per thousand for other causes.

The mortality rate from all causes declined rapidly as length of time after discharge increased, from 55 deaths per thousand per annum during the first week after discharge to approximately half this figure (25 per thousand per annum) during the second week after discharge. It then halved again to approximately 15 per thousand during the third and fourth weeks after discharge. Thereafter the rate varies between five and ten per thousand for the remainder of the first year after discharge. The decline in the mortality rate for all causes after release was largely due to a decline in the drug-related mortality rate. The drug-related mortality rate decreased from 50 per thousand per annum in the first week after release to 17 per thousand per annum in the second week and then to about four or five per thousand per annum thereafter.

It was also possible to compare these mortality rates with the general population (excess mortality ratio), matched for gender, age and observation period, based on deaths in England and Wales in 1999. Over the study period as a whole, 23 deaths in the general population would be expected compared to the total of 137 observed deaths. In the week immediately following release, prisoners in the sample were about 40 times more likely to die than a member of the general population. In this period immediately post-release, over 90% of the deaths among

released prisoners were associated with drug-related causes. A measure of the extent of excess mortality specifically associated with the immediate post-release period can be obtained. The excess mortality ratio for the first week post-release is compared with that for the period three months or more after release, when mortality rates remained constant. The excess mortality ratio due to drug-related causes for the first week post-release was 12.5 times greater than that for the period three months to one year post-release (see Figure 1).

The age of the prisoner at the time of release was significantly associated with the risk of death from both drug-related and other causes. There was a higher than expected number of deaths in all age groups compared to the general population but the difference was greatest for prisoners aged 25 to 39 at the time of release. In this age group, there were more than ten times as many deaths as expected and about two-thirds of this excess mortality was due to drug-related causes.

Causes and circumstances of deaths

It has been estimated that use of multiple drugs (poly-drug use) doubles the risk of mortality for every additional drug used (Gossop et al., 2002). Of the recorded 79 drug-related deaths, just over half (53%) involved only a single drug, with a single drug mixed with alcohol in 13% of cases. Use of multiple drugs without alcohol was recorded in 19% of cases and poly-drug use with alcohol occurred in 14% of recorded cases. Therefore, alcohol is implicated significantly in overdose deaths.

Opiates (for example, heroin) were the most frequently recorded type of drug involved in drug-related deaths in toxicology reports. Heroin/morphine was mentioned in

Figure 1 Excess mortality ratio for different time periods post-release by cause of death

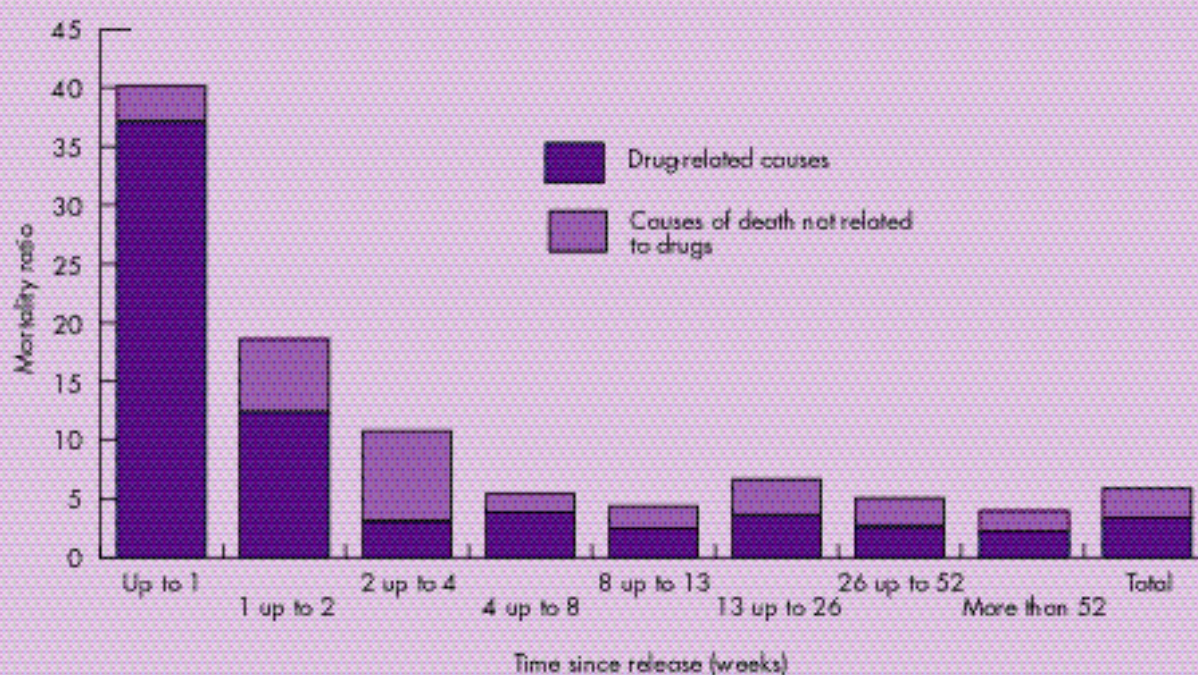


Table 1 Frequency with which different types of drugs were mentioned in coroners' reports (total cases = 79)

Type of drug	%	No.*
Heroin/morphine	71	56
Methadone	13	10
Opiate-based analgesics	6	5
Unspecified opiate	9	7
Any opiate	87	69
Cocaine	8	6
Benzodiazepine	11	9
Tricyclic anti-depressants	6	5
Other named drug	4	3
Unspecified drugs	10	8

Note: * in many cases more than one type of drug was mentioned

71% of cases and methadone was implicated in 13% of drug-related deaths.

It was also possible to deduce whether death was accidental or deliberate suicide based on coroners' verdicts – only one of the drug-related deaths was considered to be suicide. In addition, information about where death occurred was available for just under half the drug-related death cases. A large proportion of deaths occurred in residential settings, suggesting that it is possible that family members or friends may have observed the deterioration. If this is the case, further education for family members in the recognition and management of overdose may help prevent some deaths.

There were a number of deaths where the underlying cause of death was specifically alcohol-related and others where alcohol was mentioned as a contributory factor. In total amongst all deaths, 11 deaths were classified as alcohol-related and alcohol was found to be a contributory factor or found present in the body in a further 23 cases (21 of these were drug-related deaths).

Risk factors for drug-related mortality

Information on deaths occurring among a separate, smaller sample of prisoners was also collected. They were interviewed for a survey of the mental health of prisoners carried out by the Office of National Statistics in 1997. Among the sample of 2,545 prisoners who had been released by the time of this study, there had been 25 drug-

related deaths and 21 deaths from other causes. As the following findings from this survey were based on very small numbers they should be interpreted with caution. Logistic regression analysis was used to examine factors associated with drug-related mortality in this group of prisoners. This indicated that risk of drug-related death after release was higher among those who were:

- living off crime before their prison sentence
- separated, divorced or widowed
- had not been taken into local authority care
- had a small primary support group
- had committed a sex offence as their main offence
- had used illicit tranquillisers
- had used drugs in the month before entry into prison
- had not used drugs in prison.

Recommendations

Overall the determining factor in drug-related deaths soon after release would appear to be altered tolerance to opioid type drugs. Approaches to the reduction in drug-related deaths in the early release period need to include an increased awareness of the risk of overdose. This is particularly important when the offender relapses into drug use during the first weeks after release from prison.

- All prisoners as part of their release preparation should be made aware of the risk of drug-related death in the immediate post-release period as a result of the consumption of drugs.
- Individuals at higher risk of drug-related death should be identified and linked into ongoing after-care with community-based services immediately on release from prison. This should be part of a comprehensive and integrated approach to treatment in prison and the community. The CARAT scheme (Counselling, Assessment, Referral, Advice and Through-care) should have a role in any such programme.
- Consideration should be given to the establishment of a pilot study to investigate the feasibility of providing a methadone maintenance programme within prisons for individuals with long-standing opioid dependence.
- Naltrexone is an opioid receptor blocking agent – it has been suggested that it could be used as a medication to prevent relapse to heroin use. The return to previous patterns of heroin use after a period of abstinence in prison appears to be an important factor in the high drug-related mortality rates among newly-released prisoners reported here. This is probably due to an altered tolerance to heroin. Therefore, consideration should be given as to whether it would be appropriate to develop a pilot project to investigate the use of naltrexone. This

should include an evaluation of the likely impact on overdose risk and mortality.

- It appears from the death notifications reviewed in this study, that other people may have been present when a number of the drug-related deaths occurred. It is possible that the use of naloxone (similar to naltrexone) could have prevented deaths in some cases. Strang (1999) has proposed that the provision of naloxone could be a significant tool in reducing opioid-related mortality. The potential for pilot programmes aimed at making naloxone more widely

available in the community should also be considered and if successful might be extended to cover newly-released prisoners.

- The rates obtained in this study should be used as the basis for target-setting for the reduction in post-release drug-related mortality. Further research on this topic should be conducted to extend the findings of this study.

Methodological note

A cohort of released prisoners during June and December 1999, identified on the Prison Service's Inmate Information System was flagged with the National Health Service Central Registrar (NHSCR) to identify the number of deaths. This comprised Module A and yielded a sample of 12,438 cases. Module B linked data relating to 2,546 prisoners who participated in the 1997 ONS Survey of Psychiatric Morbidity among Prisoners (Singleton et al., 1998) to details of deaths from the NHSCR and coroners' records to provide information on risk factors and their relationship to mortality among released prisoners.

The definition of drug-related death used in this study is that used for the ONS database of drug-related poisoning deaths database – the International Classification of Diseases, Ninth Revision (ICD-9) which includes deaths directly caused by drugs (such as overdoses) but not those caused by indirect causes (such as dying from AIDS).

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For a more detailed report see *Drug-related mortality among newly released offenders* by Singleton, N., Pendry E., Taylor C., Farrell M. and Marsden J. (2003). Home Office Online Report Series. London: Home Office. Copies are available from the Home Office's website <http://www.homeoffice.gov.uk/rds/>

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