National Investigation into Drug Related Deaths in Scotland, 2003

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Substance Misuse Research

SCOTTISH EXECUTIVE

National Investigation into Drug Related Deaths in Scotland, 2003

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  Deborah Zador and Matt Hickman

- Comparison of Scottish and London drug related deaths
  Matt Hickman and Deborah Zador

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  Brian Kidd, Alex Baldacchino and Tom Fahey

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Executive Summary

Background

In 2003, the General Register Office for Scotland (GROS) reported the highest ever annual number of drug related deaths - 382 deaths during 2002[1]. The Scottish Deputy Justice Minister subsequently called for a national investigation into all drug-related deaths in Scotland for the year 2003. This paper summarizes the outcomes of that investigation.

Aims and Objectives

The main aims of the study were to collect and analyse information relating to the clinical and social circumstances surrounding all drug-related deaths in Scotland from January – December 2003, to identify patterns in these circumstances and the associations between them, and to make recommendations for policy and practice which may lead to a future reduction in drug-related deaths.

The main objectives of the investigation were to:

- Establish and explore the nature of the individual's social circumstances prior to death
- Determine the specific combinations of drugs associated with each death
- Establish the nature and extent of contact with "services" prior to their death
- Investigate patterns in broad demographic variables of drug related deaths for the period 1996 – 2003.

In addition, injectors who had survived an overdose in the previous 6 months were interviewed to obtain more information about their beliefs, experiences and knowledge of overdose, and characteristics of Scottish drug-related deaths were compared with a sample of London drug deaths for the same year (2003).

Methods

(1) Drug related deaths in Scotland, 2003

The study population comprised 317 cases of drug-related death in 2003 identified by GROS[2]. Information on each person's clinical and social circumstances was obtained from case records held by social care services, specialist drug treatment services, mental health services, and non-statutory agencies across all health board areas in Scotland. Information was also collected from the Scottish Prisons Service (SPS), Scottish Criminal Records Office (SCRO), Practitioner Services Division (PSD) and Information and Statistics Division (ISD) of the Common Services Agency. Data on the circumstances of death, post-mortem toxicological findings and cause of death were sourced from fiscal files.

The following variables were collected: sociodemographic characteristics including accommodation and employment status, circumstances of death and post-mortem toxicology findings, cause of death, pattern of contact with health, social and criminal justice agencies in the 6 months prior to death. In total, 175 agencies were contacted, with 173 (99%) giving permission for access to their records.

[1] General Register Office for Scotland (2003) Drug related deaths in Scotland, 2002. http://www.gro-scotland.gov.uk/statistics/library/drug-related-deaths/

[2] Definitions of drug related deaths were based on ICD-10 codes for drug related death categories.

(2) Trends in drug related deaths in Scotland, 1996-2003

Data collected by GROS on drug-related deaths in Scotland from 1996-2003 were examined for trends in all deaths and those involving heroin/morphine or methadone. Analysis focused on changes in drug-related deaths during this period, and specifically on cause of death, day of death, gender, age, health-board area and drugs specified on the death certificate.

(3) Experiences of overdose survivors

A sample of 40 injecting drug users (IDUs) were interviewed[3]. A multiple site recruitment strategy generated a representative sample of Glasgow IDUs.

(4) Comparison of Scottish and London drug related deaths

The Scottish data were extracted from Procurator Fiscal files. London coronial data were extracted from seven coronial courts, accounting for approximately 75% of drug related deaths in London. Analyses assessed differences between London (n=148) and Scotland (n=273) in terms of age, gender, toxicology, homelessness, history of imprisonment, drug treatment, place of death, number of witnesses and ambulance attendance.

Results

The study population and trends over time

Most (81%) Scottish drug related deaths in 2003 were male. The mean age was 32.7 years (ranging between ages 16 to 82 years). Thirty-nine per cent were aged between 25 and 34 years. Most (68%) cases were accidental drug overdoses. Thirteen per cent were classified as suicides.

During the period 1996-2003 in Scotland, drug-related deaths involving heroin/morphine had increased (+13.8% yearly), while those involving methadone had decreased (–0.4% yearly). A higher proportion of methadone compared to heroin/morphine–related deaths in Scotland occurred at the weekend (Friday to Sunday). Drug-related deaths had increased at a significantly higher rate among those aged 35-54 compared to 15-24 years.

Circumstances of death and toxicological findings

At the time of death, nearly half (48%) of overdoses occurred in the vicinity of other persons. Most (68%) deaths occurred in a home environment, either in their own home or in a friend's place. Few deaths (8%) occurred 'instantaneously'. Where others were present, CPR was attempted in 44% of cases, however no intervention occurred (prior to the arrival of the ambulance) in 38%. Although an ambulance was called to the scene in 82% of cases, for most victims (81%), it was too late.

The predominant drugs found at the time of death were benzodiazepines (69%), heroin/morphine (60%), and alcohol (57%). Just over a quarter (28%) of the sample was positive for methadone. Few cases were positive for stimulants; 9% were positive for cocaine. More than one drug was detected in the vast majority (95%) of cases. Nearly half of methadone positive deaths, and two-thirds of diazepam and dihydrocodeine positive deaths, involved illicit sources of

[3] As part of an ongoing evaluation of the Lord Advocate's guidance on the distribution of sterile needles and syringes to injecting drug users (see SMRT website for further details).

medications. Injection was the route of administration in 46% of cases. However a relatively high proportion (44%) of individuals did not inject any drugs prior to overdose and death[4], and a high proportion (36%) were positive for only orally consumed drugs.

'Opiate intoxication' was the most frequently recorded cause of death (44% of cases). In the majority (91%) of these cases, however, toxicology identified other drugs in addition to opiates - mainly benzodiazepines and alcohol.

In Scotland there was a higher proportion of deaths positive for dihydrocodeine (19% vs. 11%) and benzodiazepines (69% vs. 41%), a higher proportion of cases in receipt of dihydrocodeine prescriptions (8.4% vs. 2.7%), lower average blood concentrations (mg/L) of methadone (0.52 vs. 0.87) and morphine (0.27 vs. 0.36) and a higher proportion of deaths (17% vs. 10%) associated with recent prison release[5] compared with London. A higher proportion of deaths in London was positive for cocaine (42% vs. 10%).

Social circumstances prior to death

Most (237, or 75%) of the 317 people had been in contact with services in the six months prior to their death. Of this 237, 117 (49%) were living in their own house or flat. Thirty one (31%) were in unstable or temporary accommodation. Eight were recorded as having been roofless during the six months prior to death. Of the 138 for whom information on living arrangements was available, 74 (54%) lived alone and 64 (46%) lived with others. Twenty-nine of those were recorded as living with a partner, 32 with parents and 3 with dependent children.

Casefiles show that 119 (50%) had children while 55 (23%) did not[6]. The 119 who were identified as parents, had 185 children. Seventeen of these children (9%) were recorded as living with a parent who died of drug-related causes. Seventy-eight (42%) were living elsewhere and 2 were in care. No information on where these children were living was available in 88 (48%) casefiles. Of 59 females who died, casefiles record that 16 (27%) had children in their care at the time of their death.

Contact with services

The frequency of service contacts remained constant across each of the six months prior to death. Forty-five percent of those accessing services were in contact with 2 or more services at any one time. A significant proportion of contact was with General Practitioners (GPs) - 183 (77%) of all those in contact with services accessed GPs during this period. In most areas, the majority of contact was with generic providers rather than specialist drug services. Overall only 40 (17%) were known to specialist services, while in most areas there were significant contacts with psychiatric services (41 people, 17%), acute services – including Accident & Emergency (59 people, 22%) and NHS outpatients of various types (37 people, 15%). In total, 71 (30%) were known to Social Work.

Half (138) of the 237 people in contact with services had details of previous overdoses recorded in their notes. During the 6 months prior to death, 31 had experienced at least one overdose. Nine of those were recorded as accidental, 13 deliberate and 9 not known.

Sixty-six people were prescribed methadone during the six months prior to death, and 40 were being prescribed methadone at their time of death. Doses ranged

[4] Route of administration was unknown in 11% of cases.
[5] Within 3 months of release.
[6] No information was available in 63 casefiles (27%).

between 4 and 100 mg (mean 53.9 mg). Sixteen of these people (34%) were prescribed 60 mg or more. At time of death, twenty-one people (54%) were having their methadone dose increased and 8 (20%) were being reduced[7]. Only 7 (11%) were also receiving regular counselling during that time; there was no evidence of counselling taking place for the remainder of this group.

Of the total 317 cases, 149 (47%) had previously had a prison sentence. 70 (47%) died within 6 months of release. Thirty-six of these deaths (24%) occurred within one month, and 10 (28%) occurred within three days of release. While Transitional Care or other throughcare support was available to prisoners during this period, prisons show varying success regarding take-up rates.

Experiences of overdose survivors

Overdose survivors were interviewed about their experience of overdose in the previous 6 months. Most had taken more than one substance that day. Heroin had been taken by all but one, and heroin and diazepam taken together or on the same day was the most common combination.

Interviewees had some awareness of overdose risk. However, this knowledge was not extensive and there were misconceptions. Less than half mentioned tolerance as a factor or considered that a mixture of drugs could be risky. Some believed that overdose would not occur if heroin was smoked or injected by itself. Injecting in company was the most frequently cited prevention strategy.

Inflicting physical pain was the most common intervention used by injecting drug users to revive an overdose survivor, and was regarded as the most effective strategy. Putting the overdose victim into the recovery position was cited by half the sample. Half were worried about having another overdose. Among those who were not worried, some claimed not to care whether they lived or died.

Implications and conclusions

This investigation has identified implications for services in preventing drug-related deaths, and has highlighted limitations of the available data:

- There is a need to further develop and deliver training and education on risks of overdose and how to respond effectively, to drug users and their families.
- Overdose prevention initiatives should continue to emphasise that most fatal drug overdoses are polydrug deaths.
- Primary care and other 'generic' services need training to increase awareness of persons at high risk of drug related death.
- Delivery of medical treatment to drug misusers, including substitute prescribing, needs to be improved in line with best practice guidelines.
- Care pathways across the prison/community interface should be reviewed to ensure adequate accessibility to services for all newly released prisoners.
- Developing a standardised nomenclature for recording drug related deaths would improve surveillance of trends in drug related deaths.
- There is a need to improve the quality of record keeping in services.

Finally, the report provides some baseline indicators by which the effectiveness of interventions to prevent or reduce drug-related death might be measured.

[7] In 11 cases, there was inadequate information in casefiles to determine prescribing plans or trends.

Chapter 1: Introduction

What is in this chapter? This chapter summarises the information that is already known about drug related deaths. It describes the background to the commissioning of this study, sets out the aims and objectives and describes the methods employed to meet these.

Where did the information come from? The background section is drawn from published international research.

Purpose of this report

In 2003, the General Register Office for Scotland (GROS) reported the country's highest ever annual number of drug related deaths, 382 deaths during 2002 (GROS 2003). The Scottish Deputy Justice Minister subsequently called for a national investigation into all drug related deaths in Scotland for the year 2003. This report is the outcome of that investigation.

A great deal is already known about the circumstances and toxicological findings of drug related deaths (DRDs), especially those involving heroin and methadone. There is now a strong research evidence base indicating that many of these deaths are preventable. However, less is known about the social and clinical circumstances of these individuals prior to their deaths, in particular the nature of contact made with treatment agencies, prison service and other services. This study explores the patterns of contact with service providers in the 6 months prior to death, and examines implications of these findings for services. It provides the most recent information to date on the toxicology and circumstances of death of drug-related deaths in Scotland, and compares these findings with data emerging from a concurrent study into drug-related deaths in London for the same year. The opinions, beliefs and knowledge of a group of living injectors who have survived a recent overdose are also reported here.

Background

Known characteristics of drug related deaths

Remarkably, the characteristics, correlates and contexts of opioid drug related deaths examined in different countries and at different times are consistent (Best et al 2000). Consistent findings include:

- High prevalence of poly-drug use, especially benzodiazepines and alcohol (Darke and Zador 1996, Risser et al 2000, Oliver and Keen 2003)
- Loss of tolerance due to recent abstinence from heroin e.g. persons recently released from prison or abstinence based inpatient programmes (Seaman et al 1998, Bird and Hutchinson 2003, Strang et al 2003)
- Deaths occurring in the presence of others and/or in a home environment. (Zador et al 1996, Darke et al 2000, np-SAD 2002)

All of these circumstantial factors strongly imply the opportunity for intervention prior to death.

White and Irvine (1999) have speculated that resistance to respiratory depression may be less complete and fall more rapidly than resistance to the 'euphoric' effects of heroin. Thus, as injectors consume more drugs the gap between euphoria and overdose narrows, and any 'dip' in tolerance due to interruptions in drug use precipitated by imprisonment, treatment or unfamiliar environment may prove fatal (White and Irvine 1999, Siegel 1984).

Route of administration is also predictive of increased mortality. Most heroin related deaths have occurred following an intravenous injection (Darke et al 2000). Overdose events were rare among smokers of heroin (Gossop et al 1996). Oliver and Keen (2003) recently confirmed these findings when they reported that the intravenous route of administration was used in 84% of DRDs in Sheffield, England.

Methadone related deaths, as for heroin deaths have been found to be primarily poly-drug deaths, few are positive only for methadone (Perret et al 2000, Sunjic and Zador 1999). An international review of methadone related deaths indicated that the majority were diversion related i.e. occurring in persons not prescribed methadone at time of death (Zador 1999), a finding replicated by the most recent published Scottish investigation of methadone related deaths (Seymour et al 2003).

Further examination of the death certificates and coronial records in the NTORS cohort (Gossop et al 2002) were consistent with previous findings: the majority of deaths were found to be accidental, with more than one drug being detected at autopsy in most cases, occurring in a home environment, and with half of cases dying in the vicinity of another person. Non-prescribed benzodiazepine use, harmful alcohol consumption, anxiety and homelessness were found to be predictive of increased mortality.

Scottish data on all drug related deaths (GROS 2003) in 2002 indicated that the sociodemographic profile, toxicological findings and circumstances of death had remained largely unchanged. Most cases of DRD continued to occur in males under the age of 45 years, predominantly involved heroin/morphine with a high proportion positive for benzodiazepines and alcohol, and primarily occurred in known or suspected drug abusers.

Long term trends of drug-related mortality and fatal overdose suggest that they may have fallen from over 2% per annum among opiate users recruited from 1968-1976 to 1% in 1986-1992 (Ghodse et al 1998). Two recent record linkage studies in the UK reported that among the NTORS cohort the annual mortality rate was 1.2% after four years follow-up (Gossop et al 2002), and in a pilot cohort recruited in London the annual mortality was 1.6% after an average of two years follow-up, 17 times higher than the mortality rate of the London population (Hickman et al 2003a).

Among Glasgow injectors followed up after entry to methadone treatment in 1996, 1.5% died in the first year (Hutchinson et al 2000), and this annual rate was sustained in the subsequent 4-5 years.

Risser et al (1996) established a profile of the family background of Austrian cases of drug related death based on interviews with family members of the deceased. This study found that cases experienced high rates of traumatic events during childhood, predominantly parental divorce or death, initiated alcohol and tobacco smoking by age 15, and that a high proportion of cases had a family member with a drinking problem, among other findings. This highlights the importance of the social and family contexts of DRDs.

Research into DRDs is now building on the above findings to examine the implications for prevention i.e. interventions to reduce DRDs.

Survivors of drug overdose

It is instructive to note the findings from research to date into survivors of drug overdose. Neale (2000) interviewed 77 resuscitated heroin users in two Scottish accident and emergency departments, and found that attempted suicide was the reason underlying the overdose in 49%. However, interviews with a sample of Australian drug users found that deliberate heroin overdose as a method for attempting suicide was reported by only 10% (Darke and Ross 2001). These authors followed up with an international literature review of rates, risk factors and methods of suicide among heroin users and found that while this group was 14 times more likely than peers to die from suicide, deliberate overdose of heroin as a means of suicide was infrequently used compared with prescription non-opiate medication overdose or more violent methods (Darke and Ross 2002).

Perception of risk

In other research into survivors of drug overdose, Darke and Ross (1997) found that 80% of survivors of heroin overdose did not perceive themselves at high risk of overdose, despite experiencing one in the previous six months and despite research indicating that overdose was a common occurrence in heroin users (Darke et al 1996). Zador et al (2001) confirmed this perception of a low personal likelihood of a subsequent overdose among heroin users interviewed within seven days of their most recent overdose. Furthermore, only 11% stated that they would seek treatment when asked what impact their recent overdose would have on their future drug using behaviour. The majority of individuals indicated that they would continue to use heroin albeit more safely, or try to stop.

Other research has shown that although drug users give many reasons for seeking treatment (desire to stop using drugs, tired of the heroin-using lifestyle, fear of re-incarceration or relationship breakdown), experience of overdose or worry about having one was rarely one of these reasons (Weatherburn and Lind 2001, Sell and Zador 2004).

Recent research has revealed the high prevalence of morbidity in injecting drug users both as a cause and consequence of overdose (Warner-Smith et al 2001) which indicates the need to emphasise the greater range of health consequences of a non-fatal overdose in harm reduction messages to injecting drug users. The offer of intervention e.g. provision of an information card about local agencies and services to heroin users at the time of overdose by ambulance officers has been shown to be successful at targeting an often 'hidden population' of high risk users who might not otherwise be in contact with treatment or other services (Dietze et al 2002).

This evidence base implies that experience of overdose is neither a deterrent to future drug use nor a motivator for seeking treatment. If overdose is personally contextualised as an acceptable "occupational risk" by injecting drug users, along with the risk of blood-borne viral infection and incarceration, then this would imply a different overdose prevention strategy from that where overdose is contextualised as a marker of underlying psychopathology. The complex relationships between experience of drug overdose, perceived risk of overdose, depression and suicide need further exploration. At the very least, research to date suggests that future strategies designed to prevent drug overdose need to target risk perceptions, knowledge of risk factors for fatal overdose, as well as

mental health status and other factors within this high risk group. However, these findings need to be replicated in Scottish drug users.

Aims and Objectives of the Study

Aims

1. To collect and analyse information relating to the clinical and social circumstances surrounding all drug-related deaths in Scotland for the period January – December 2003.
2. To identify patterns in social and clinical circumstances surrounding the deaths, and the associations between them.
3. To make recommendations for policy and practice which may lead to a future reduction in drug-related deaths.

Objectives

1. For all individuals: to establish and explore the nature of the individual's social circumstances prior to death including employment and accommodation status, social networks and family circumstances, and the nature of the individual's drug use.

2. For all individuals: to determine the specific combinations of drugs associated with each death: to analyse patterns in the toxicology reports on each death, to determine the involvement of illicitly-obtained prescription medication, to investigate differences between injecting drug users and non-injecting drug users in the circumstances of death.
3. For all individuals: to establish the nature and extent of contact with "services" prior to their death.

4. For those individuals who were in contact with "services" prior to death:

    - To determine the nature of the individual's contact. To determine the individuals who had a previous non-fatal overdose, and whether there was any follow-up by "services".

    - To determine the individuals who had been released from prison, and whether they had been offered, and had participated in the prison Transitional Care arrangements.

    - To determine the nature of the individual's contact with the wider criminal justice system (e.g., the police and court system).

    - To collect detailed data on the care of individuals who had received treatment (including a detoxification programme) for drug misuse, to compare the clinical care received by those who were in treatment with national clinical guidelines, to consider whether there was anything that "services" could have done, or could do in the future, to prevent death.
5. For individuals who were not in contact with services prior to death: to identify whether individuals were unknown to "services" or whether there had been breakdowns in the care pathways for these individuals, and to determine

which, if any, were waiting for drug treatment, and explore the contribution of this to their death.

6. On the basis of the information gathered for 1-5 above: to explore the possibility of drawing conclusions about regional differences in deaths, and to determine whether the circumstances associated with 2003 deaths are broadly reflective of what is already known about risk factors from previous research.

7. Investigate patterns in broad demographic variables (e.g., gender, age, etc.) for the period 1996 – 2003, investigate patterns in gender and age.

In addition, the study includes the following aims:

1. Extended interviews with a sub-sample of living injectors who had survived an overdose in the 6 months prior to interview to obtain more information about survivors' beliefs, experience and knowledge of overdose.

2. A comparison of the characteristics of Scottish drug related deaths with a sample of London drug deaths for the same year (2003).

Methods

(1) Drug related deaths in Scotland, 2003

The study population comprised 317 cases of drug-related death in 2003 identified by GROS. Case definitions of drug related deaths were based on ICD-10 codes for drug-related death categories (see Appendix 1). In brief, each case of a drug related death as found by the Procurator Fiscal was entered by the GROS into one of four main ICD-10 categories: 'mental and behavioural disorders due to psychoactive substance use' (F11, 13, 19), i.e. accidental drug overdoses occurring in persons with drug dependence or abuse, drug-related suicides (X61, 62), 'poisoning by narcotics of undetermined intent' (Y12), and 'accidental poisoning' (X41).

Prior to commencement of the study, full ethical approval was obtained from the MREC Scotland. The study was conducted within the research governance framework for health and community care (SEHD, 2001) and was externally audited in February 2005. NHS Forth Valley acted as research sponsor for the investigation.

Before contacting NHS services each local research ethics committee (LREC) was informed of the study and management approval to conduct the study was obtained from each research and development committee.

The Association of Directors of Social Work (ADSW) standing committee on standards, training and research gave formal support to this study in January 2004. In addition each Director of Service or equivalent was contacted for permission prior to approaching individual social work services.

Two standardised data collection forms were developed: The clinical and social circumstances (CSC) form was used to record information obtained from case notes held with social care services, specialist drug treatment services, mental health services, and non-statutory agencies across all health board areas in Scotland. The fiscal file (FF) data collection form recorded data on the circumstances of death, post-mortem toxicological findings and cause of death

sourced from deceased cases fiscal files, sent down by Procurators Fiscal offices to the Crown Office.

Copies of these data collection forms may be obtained from the investigators.

In addition, information was collected from the Scottish Prisons Service (SPS), Scottish Criminal Records Office (SCRO), Practitioner Services Division (PSD) and Information and Statistics Division (ISD) of the Common Services Agency (SMR 00 (outpatient attendances), 01 (acute hospital admissions) and 04 (psychiatric hospital admissions) databases.

The following variables of information were collected: sociodemographic characteristics including accommodation, employment and relationship status, circumstances of death and post-mortem toxicology findings, cause of death, pattern of contact with health, social and criminal justice agencies in the 6 months prior to death including reason for, frequency of, and outcome of contact, medical and psychiatric history, and drug treatment details, history of non-fatal overdose and relevant details of offending history including incarceration.

A team of six data collectors were recruited to the study and trained in the use of the data forms and in the interpretation of service case note and fiscal file information by three of the investigators (BK and AB, and DZ respectively). The data collectors were under the management and regular supervision of the research project manager (AR). They read files and recorded relevant data onto the CSC and FF forms.

A list of all drug services in Scotland was compiled by merging three existing databases: the Corporate Action Plans of the 22 Drug and Alcohol Action Teams, the services database of The Centre for Drug Misuse Research, University of Glasgow and the Scottish Drugs Forum Directory of Specialist Helping Agencies. In addition, all NHS mental health services and local authority social work departments were included.

The project manager made initial contact with each agency normally by phone, outlining the nature of the investigation and asking for agreement in principle to access any records that they might hold. A letter detailing the aims and objectives of the study, relevant permissions and approval and a formal request for access to records followed this up. Once permission had been given the geographic catchment area of each service was established and a list of names of people who died within that area was provided to them. This was normally sent as a password-protected spreadsheet to a named individual within the agency. That person normally chose the password. On occasion, with the prior knowledge and agreement of the named individual, the list of names was posted to an agency addressed to that person and marked 'private and confidential'.

After establishing which people had been known to each service, arrangements were made for the data collectors to visit the agency in order to examine the case records and extract the data required to complete the CSC form as fully as possible. Table 1.1 below sets out the number of agencies contacted in each health board area.

Table 1.1: Number of agencies contacted in each health board area

Health Board Area	NHS	Local Authority	Non-Statutory
Argyll & Clyde	6	7	11
Ayrshire & Arran	3	4	5
Borders	1	0	0
Dumfries & Galloway	2	2	2
Fife	2	3	8
Forth Valley	3	3	4
Grampian	4	4	5
Greater Glasgow	5	15	13
Highland	2	2	3
Lanarkshire	5	8	2
Lothian	3	4	22
Tayside	4	7	1
Western Isles	1	0	0
Scotland	41	59	75

In total 175 services were contacted, of which 173 (99%) gave their permission for the data collectors to access their records.

Data recorded on the CSC and FF forms as well as selected data provided by ISD were entered into SPSS (v. 12) for quantitative analysis. These analyses were descriptive.

(2) Trends in drug related deaths in Scotland, 1996-2003

Data collected by the General Register Office for Scotland (GROS) on drug-related deaths in Scotland during 1996-2003 were examined for trends in all deaths and those involving either heroin/morphine or methadone. Poisson regression was used to assess the rate of change in drug-related deaths during 1996-2003 by cause of death, day of death, gender, age, health-board area and drugs specified on the death certificate.

(3) Experiences of overdose survivors

Injecting drug users (IDUs) were interviewed as part of an ongoing study evaluating the change in the Lord Advocate's guidelines on the supply of needle and syringes to injecting drug users. A multiple site recruitment strategy was used to generate as representative a sample as possible of IDUs in Glasgow. Sites included pharmacy exchanges, needle exchanges, drug treatment services and various street sites throughout Glasgow. Recruitment was undertaken in two phases. The first phase took place between February and April 2004. The second phase began in July 2004 and ended in October 2004.

Criteria for inclusion in the study was having injected a drug in the previous month.

Interviewers explained the study to all respondents and assured them that all information provided by them was anonymous and confidential. Those who had experienced an overdose in the previous 6 months were asked to consent to a follow-up interview and asked to provide a contact number and address. Interviews took place in a venue chosen by the injector (usually their own home) and were audio-taped.

The interviews sought to determine:

- IDUs knowledge of risk factors for overdose
- IDUs overdose risk behaviours
- IDUs knowledge of appropriate interventions in overdose situations
- Why respondents believed they had survived their overdose
- How overdoses could be prevented
- If respondents were in treatment at time of overdose
- If not in treatment, why not
- IDUs personal perception of overdose risk.

Audio-taped interviews were transcribed and analysed by summarising responses and identifying themes. Quantitative data were entered into SPSS (v.12) for analysis.

(4) Comparison of Scottish and London Drug Related Deaths (DRDs)

The Scottish data were extracted from Procurator Fiscal files as described above. London coronial data were extracted from 7 of the 8 coronial courts, accounting for approximately 75% of drug related deaths in London. As the GROS criteria for identifying cases of drug related deaths were not used in the London study, deaths from both samples were selected that were positive on post-mortem toxicology for morphine (heroin), methadone, cocaine, MDMA, amphetamines, or dihydrocodeine yielding 273 deaths for Scotland and 148 for London. The number of Scottish cases used for this part of the study is lower than the total number of deaths investigated in the main report, as deaths not positive for any of these drugs were excluded.

All data were entered into SPSS (v.12) for quantitative analysis. Simple descriptive analyses assessed differences between London and Scotland in terms of age, gender, toxicology, homelessness, history of imprisonment, drug treatment, place of death, number of witnesses and ambulance attendance.

Chapter 2: Profile of the study population

What is in this chapter? This section of the report describes the demographic profile of the study population. It also presents trends in drug related deaths in Scotland during 1996-2003.

Where did the information come from? Demographic data on drug-related deaths in 2003 and trends in characteristics of drug deaths during 1996-2003 were sourced from the GROS database. Deprivation categories were available from NHS returns to ISD on 218 of the 317 cases of drug-related death. There were 317 drug related deaths in Scotland in 2003 registered by the General Register Office for Scotland (GROS).

Cause of death

Cause of death by ICD-10 drug-related death category and gender for the sample are set out in Table 2.1. Definitions of drug-related deaths based on ICD-10 criteria are provided in Appendix 1.

Table 2.1: Drug related deaths by ICD-10 category and gender (n=317)

ICD-10 Category	All (%)	Male	Female	Ratio (M:F)
Drug abuse (F11-F16, F19)	216 (68)	190	26	7.3:1
Intentional self-poisoning (X60-X64)	40 (13)	24	16	1.5:1
Accidental poisoning (X40-X44)	15 (5)	12	3	4:1
Undetermined (Y10-Y14)	46 (15)	30	16	1.9:1
All	317 (100)	256	61	4.2:1

Source: GROS (2004)

The majority (68%) of cases were considered to have died as a result of 'drug abuse', i.e. 'mental and behavioural disorders due to psychoactive substance use' (ICD-10) or (more commonly known as) fatal drug overdose. Suicides comprised 13% of the total number of deaths.

Demographics

The demographic characteristics of the population are set out in Table 2.2. The majority of cases were male (81%). Mean age of the group was 32.7 years, range 16 to 82 years). Over one third of the group (39%) was aged between 25 and 34 years.

Table 2.2: Demographic characteristics of cases of drug related death in Scotland in 2003 (n=317)

Characteristic	Number	(%)
Gender:		
Male	256	(81)
Female	61	(19)
Age (years):		
Total group	32.7 (mean) 31.0 (median) 16-82 (range)	
Male	32.1 16-82 (range)	
Female	35.1 16-68 (range)	
Age bands (years):		
15-24	78	(25)
25-34	123	(39)
35-44	80	(25)
45-54	20	(6.3)
55-64	11	(3.5)
65+	5	(1.6)

Day of death

Table 2.3 shows the distribution of drug deaths by day of death. One third (35%) died on a weekend day.

Table 2.3: Drug related deaths by day of week (n=317)

Day of week of death:	Number	(%)
Monday	36	(11.4)
Tuesday	35	(11.0)
Wednesday	41	(12.9)
Thursday	45	(14.2)
Friday	48	(15.1)
Saturday	63	(19.9)
Sunday	49	(15.5)

Social deprivation

The Carstairs index (Carstairs and Morris 1991) for social deprivation classifies postcode areas on a scale of one to seven with 1 being the most affluent areas of the country and 7 being those most socially deprived. Deprivation categories (depcats) of cases of drug related death (n=218; excludes cases with unknown depcat scores) were compared with those for the general population (in parentheses) in Scotland (Table 2.4).

Table 2.4: Percentage of drug-related deaths (n=218[1]) and of general population, Scotland by deprivation category

	Deprivation Category (DEPCAT)						
Health Board	**1**	**2**	**3**	**4**	**5**	**6**	**7**
TOTAL % DRDs	**0.5**	**6**	**12**	**24**	**15**	**18**	**24**
(% general popul[n])	**(6)**	**(14)**	**(22)**	**(25)**	**(15)**	**(11)**	**(7)**
Argyll & Clyde	0	5	5	23	9	46	14
	(4)	(12)	(18)	(20)	(25)	(16)	(5)
Ayrshire & Arran	0	0	7	36	43	14	0
	(2)	(8)	(18)	(26)	(24)	(22)	(0)
Borders	0	0	100	0	0	0	0
	(7)	(11)	(45)	(31)	(6)	(0)	(0)
Dumfries & Galloway	0	13	13	50	13	13	0
	(0)	(9)	(40)	(32)	(0)	(19)	(0)
Fife	0	0	38	63	0	0	0
	(4)	(13)	(24)	(33)	(17)	(6)	(2)
Forth Valley	0	10	10	20	40	10	10
	(4)	(22)	(13)	(41)	(18)	(2)	(0)
Grampian	0	29	13	38	21	0	0
	(18)	(26)	(26)	(22)	(4)	(6)	(0)
Greater Glasgow	0	3	6	11	3	20	58
	(5)	(12)	(9)	(16)	(10)	(18)	(30)
Highland	0	0	50	50	0	0	0
	(0)	(9)	(45)	(38)	(8)	(0)	(0)
Lanarkshire	6	0	18	12	18	35	12
	(1)	(4)	(21)	(30)	(26)	(16)	(2)
Lothian	0	7	14	29	25	7	18
	(9)	(16)	(20)	(30)	(17)	(5)	(3)
Orkney	0	0	0	0	0	0	0
	(0)	(0)	(100)	(0)	(0)	(0)	(0)
Shetland	0	0	0	0	0	0	0
	(0)	(0)	(62)	(38)	(0)	(0)	(0)
Tayside	0	0	18	27	27	27	0
	(8)	(21)	(29)	(10)	(11)	(15)	(7)
Western Isles[2]	0	0	0	0	0	0	0
	(0)	(0)	(40)	(55)	(4)	(0)	(0)

[1] Excludes 99 (31%) cases of drug related death whose depcat scores were unknown

[2] One death of unknown depcat therefore excluded from this analysis

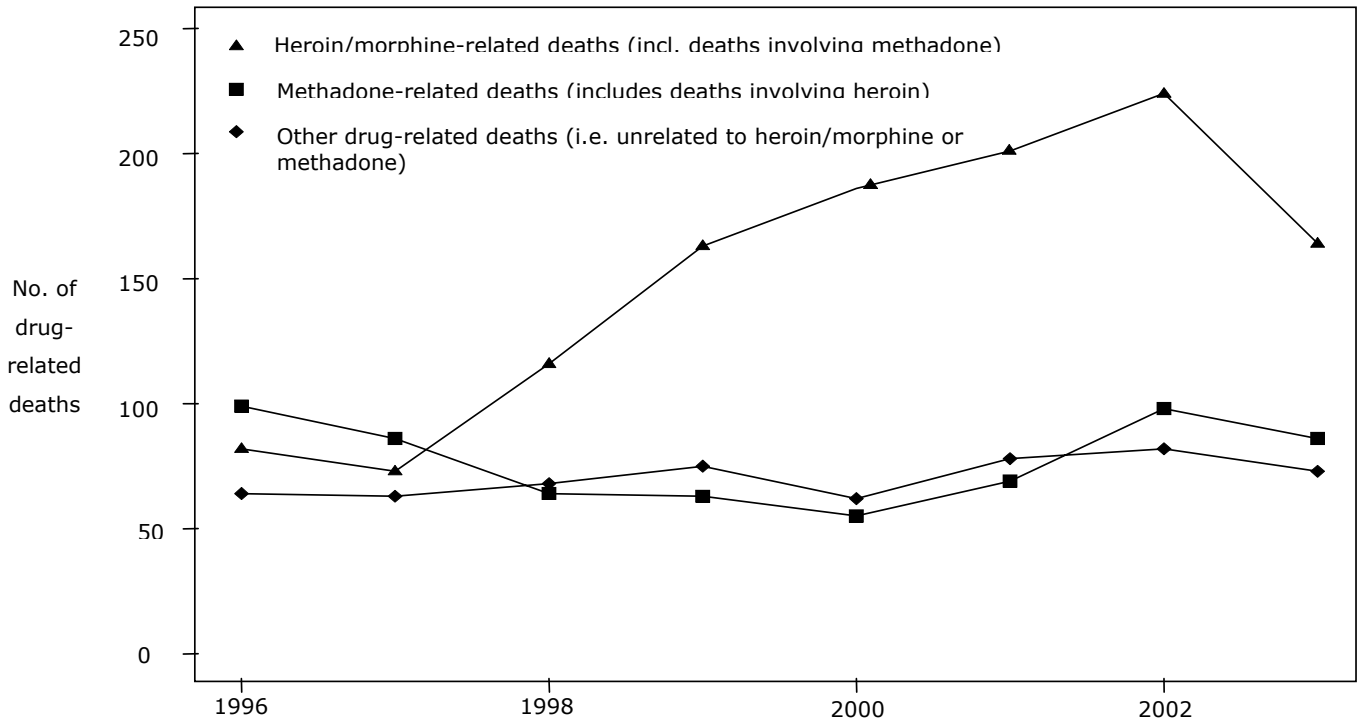
For most health board areas, distribution of drug deaths by depcat score broadly reflected the general population's distribution. Of note Greater Glasgow was the only area to have more than half its total percentage of drug deaths in the most deprived category (category 7) – this finding reflected the high proportion of the local general population in the same category. Nationally, there was a lower proportion of drug related deaths in the most affluent regions (categories 1 and 2) compared with the general population (6.5% vs. 20%) and a higher proportion

of cases (42% vs. 18%) in the most deprived regions (categories 6 and 7). However, it must be noted that in 31% of drug related deaths, deprivation category was unknown.

Trends in and characteristics of drug-related deaths in Scotland, 1996-2003

The majority of the 2,331 drug-related deaths recorded in Scotland during 1996-2003 were aged 15-54 years (96%: 2,240/2,331). Restricting to this age group, drug-related deaths in Scotland increased from 234 in 1996 to 301 in 2003. Three out of four deaths involved either heroin/morphine (1,209; 54%) or methadone (620; 28%). Figure 2.1 shows the trends in heroin/morphine, methadone and other drug–related deaths in Scotland during 1996-2003. Deaths involving heroin/morphine increased two-fold from 82 in 1996 to 164 in 2003 (representing a 13.8% yearly increase), whereas those involving methadone reduced from 99 in 1996 to 55 in 1999 and 86 in 2003 (representing a 0.4% yearly decrease). Other drug-related deaths (i.e. those without heroin/morphine or methadone detected) remained relatively stable, with a 3% yearly increase, during 1996-2003.

Figure 2.5: Trends in heroin/morphine, methadone and other drug - related deaths among persons aged 15-54 years in Scotland, 1996-2003



Tables A2.1 – A2.3 (Appendix 2) show the characteristics of and the annual change in (a) all drug-related, (b) heroin/morphine-related and (c) methadone-related deaths among persons aged 15-54 years in Scotland during 1996-2003. The majority (79%) of all drug-related deaths were considered to have died from either drug abuse or accidental poisoning, 9% from intentional self-poisoning and 12% were undetermined as to accidental or intentional. A significantly higher proportion of methadone (55%) compared to heroin/morphine (45%) related deaths occurred at the weekend, defined as Friday, Saturday or Sunday;

although, the number of deaths at the weekend involving methadone have decreased during 1996-2003 by 3.5% per year. The annual number of drug-related deaths increased at a significantly higher rate among persons aged 35-54 years compared to those aged 15-24 years (16.0% vs 0.3% yearly increase, respectively).

The annual increase in all drug-related deaths was higher in health-board areas (except for Lothian and Tayside) outwith Glasgow. In Lothian and Tayside, approximately half of drug-related deaths involved methadone, although these deaths reduced by 11.2% and 19.3% per year, respectively, during 1996-2003 (Table A2c). The annual increase in heroin/morphine-related deaths was significantly higher in other health-board areas (except Lothian) compared to Glasgow; the percentage of heroin/morphine-related deaths in Glasgow reduced from 70% in 1996 to 37% in 2003. A substantial proportion (57%) of drug-related deaths involved benzodiazepines and 38% involved alcohol. The number of drug-related deaths involving cocaine, although only representing 5% of the total, increased from 3 in 1996 to 28 in 2003.

Key points

- Most Scottish drug related deaths in 2003 were male, and in their early 30s (mean age of 32.7 years).
- The majority (68%) of drug related deaths in Scotland were accidental fatal overdoses. Suicides comprised 13% of the total.
- Trends in drug related deaths in Scotland from 1996 to 2003 were complex and showed a great deal of heterogeneity over time in relation to geographical distribution and the involvement of heroin/morphine or methadone.
- Drug-related deaths involving heroin/morphine had increased at a significantly higher rate than those involving methadone in Scotland during 1996-2003 (13.8% vs –0.4% per year, respectively). In Glasgow however, deaths involving methadone increased at a higher rate (average 9.7% per year) than deaths involving heroin (which increased at an average 6.5% per year).
- Drug-related deaths involving heroin/morphine had increased at a significantly higher rate out-with the main urban centres of Glasgow and Lothian during 1996-2003. Overall, there were twice as many deaths involving heroin/morphine as methadone. However, the ratio of heroin/morphine : methadone overdose deaths varied considerably between geographical areas:- for example, from 117 : 26 in Lanarkshire to 21 : 70 in Tayside and 59 : 175 in Lothian.
- A higher proportion of methadone compared to heroin/morphine –related deaths in Scotland occurred at the weekend (defined as Friday to Sunday). Drug-related deaths in Scotland, including those involving either heroin/morphine or methadone, have increased at a significantly higher rate among those aged 35-54 compared to 15-24 years during 1996-2003.

Chapter 3: Toxicological findings and circumstances of death

What is in this chapter? This section describes the circumstances of death and toxicological findings of the sample of drug-related deaths, and determines the involvement of illicitly-obtained prescription medication. It also investigates toxicological differences between injecting drug users and non-injecting drug users, and compares characteristics of the Scottish sample of drug deaths with those of a group of drug related deaths in London for the same year.

Where did the information come from? The findings presented in this section on toxicology and circumstances of death are based on data extracted from the fiscal files for the 317 cases of drug related death. Seventeen (17) files were unavailable either because of ongoing criminal proceedings or because some were destroyed by fire at one of the Procurator Fiscal offices. Therefore these cases were excluded from the analysis, leaving a sample size of 300 cases.

London coronial data were extracted from seven of the 8 coronial courts, accounting for approximately 75% of drug related deaths in London. As the GROS criteria for identifying cases of drug related deaths were not used in the London study, deaths from both samples were selected that were positive on post-mortem toxicology for morphine (heroin), methadone, cocaine, MDMA, amphetamines, or dihydrocodeine, yielding 273 in Scotland and 148 deaths in London. The number of Scottish cases used for this part of the study is lower than the total number of deaths investigated in the main report as deaths not positive for any of these drugs were excluded.

Social and drug-using characteristics of cases of drug-related death

The social circumstances *at the time of death* for the study population are shown in Table 3.1. The majority (81%) of cases were living at home in a house or flat when they died. Few were noted as street homeless in the fiscal files (<2%) although another 35 cases (12%) were in temporary housing at the time of their deaths. Just over half (58%) were living with others, although not necessarily in a relationship. Thirty-six per cent (36%) of cases were single.

Table 3.1: Social and drug-using history characteristics of cases of drug-related death (n=300)

Characteristic	Number	(%)
Accommodation (at time of death):		
House/flat	244	(81.3)
Hostel	24	(8.0)
'Sofa surfer'	11	(3.7)
Hotel room	8	(2.7)
Street homeless	5	(1.7)
Campervan/car	2	(0.7)
Unknown	6	(2.0)
Living arrangements (at time of death):		
Living with others	175	(58.3)
Living alone	110	(36.7)
Other	4	(1.3)
Unknown	11	(3.7)
Relationship status (at time of death):		
Single	109	(36.3)
In a relationship	98	(32.7)
Unknown	93	(31.0)
Pattern of drug use:		
Dependent	228	(76.0)
Recreational	15	(5.0)
First time ('novice')	2	(0.7)
Unknown	55	(18.3)
Known IV drug user:		
Yes	145	(48.3)
No	89	(29.7)
Unknown	66	(22.0)

The majority of cases were dependent drug users (76%) and nearly half (48%) were known to be injecting drug users at some time in their drug-using careers.

Circumstances of death

In nearly half (48%) of cases, others were present in the vicinity of the overdose event, usually a friend or partner (Table 3.2). Deaths occurred in a home environment (68%), either in their own home or in a friend's place. Period of time elapsed between overdose and death for most cases was several hours or more (50%) or within an hour (14%), and indicates that there was potential opportunity for intervention. Drugs were injected at the time of death in 46% of cases.

Table 3.2: Circumstances of death (n=300)

Characteristic	Number	(%)
Number of cases where others present	*145*	*(48.3)*
Type of witness present:*		
Friend	68	(46.9)**
Partner	46	(31.7)
Family member	29	(20.0)
Other	13	(9.0)
Unknown	3	(2.1)
Place of death:		
Own home	145	(48.3)
Friend's home	60	(20.0)
Hospital	30	(10.0)
Hostel	19	(6.3)
Family member's home	17	(5.7)
Hotel/motel	7	(2.3)
Other	21	(7.0)
Unable to be determined	1	(0.3)
Period of time between overdose and death:		
'Instant'	25	(8.3)
Within the hour	43	(14.3)
Several hours	136	(45.3)
12 hours or more	11	(3.7)
Several days	4	(1.3)
Not seen for a time and found dead	31	(10.3)
Unable to be determined	50	(16.7)
Drugs/paraphernalia present at the scene:		
Yes	197	(65.7)
No	93	(31.0)
Unknown	10	(3.3)
Route of administration of 'fatal' dose[#]		
Injection	137	(45.7)
Non-injection	131	(43.7)
Unknown	32	(10.7)

* Total number of witnesses present exceeds total number of cases where witness present because some cases had more than one witness at the scene

**For this variable, numbers were expressed as percentage of total number of cases where witness present (n=145)

[#] A case was defined as an injector if the route of administration of one or more drugs prior to death included injection. Cases considered to have died from a combination of routes e.g. injection of heroin with oral consumption of diazepam and alcohol were classified as injectors. Non-injectors comprised all cases not defined as injectors i.e. cases who died after ingestion of drugs by oral, smoked and/or snorted routes. A case was classified 'unknown' if the route of administration was unable to be determined from the available information within the file.

Interventions attempted at the scene

Of cases where a witness was present (n=145), the most frequent intervention attempted was cardio-pulmonary resuscitation (CPR) (64, 44%), followed by various combinations of slapping, using cold water or showering (31, 21%). However, no intervention was attempted by those present in nearly 40% of cases. At some (unrecorded) point in time after the overdose became known to others, an ambulance was called to the scene in 82% of cases. Of calls made to the ambulance by witnesses, most were made by friends or family (78% of 247). Nevertheless, in 81% of cases it was too late, the person being identified as dead on arrival by the ambulance crew. These data are set out in Table 3.3.

Police were in attendance at 90% of the scenes of the overdose following a call, in most cases where it was known, from either the ambulance service (18%), or a friend or acquaintance (16%). In 48% of cases however, it was not clear who had notified the police. At the scene, the police undertook no activity in 87% of cases, in 5% of cases they were called to obtain access to the overdosed person e.g. force entry through a locked door, and in 10 cases police performed CPR. (In October 2003 a *Memorandum of Understanding* was developed and implemented between the police and ambulance services which states that the police should be called to attend all cases where the use of illicit drugs is known or suspected).

Table 3.3: Interventions attempted (n=300)

Characteristic	Number	(%)
Interventions attempted by witnesses (n=145):		
None	55	(37.9)
CPR	64	(44.1)
Move to coma position	9	(6.2)
Other (slapping, cold water, shower)	31	(21.4)
Ambulance called to scene:		
Yes	247	(82.3)
No	53	17.7)
Who called ambulance(n=247):		
Friend/family	192	(77.7)
Worker/staff member	26	(10.5)
Police	13	(5.3)
Other	7	(2.8)
Unknown	9	(3.6)
Deceased already dead on ambulance's arrival (n=247):		
Yes	201	(81.4)
No	37	(15.0)
Unknown	9	(3.6)
Police in attendance:		
Yes	271	(90.3)
No	29	(9.7)
Who called police:		
Ambulance	53	(17.7)
Friend	49	(16.3)
Family	17	(5.7)
Worker/staff	15	(5.0)
Other	23	(7.7)
Not known	143	(47.7)
Interventions by police:		
None	262	(87.3)
Obtain access to person	15	(5.0)
CPR	10	(3.3)
Other	12	(4.0)
Moved to coma position	1	(0.3)

These findings indicate a period of delay during which no intervention was undertaken by witnesses before contact with ambulance services was made. Of those witnesses who tried to resuscitate the person before the arrival of the ambulance, CPR was more frequently attempted than slapping the victim or other intervention, however it was utilised in less than half of cases.

Toxicological findings

Results of post-mortem drug testing for the sample are set out in Table 3.4.

Table 3.4: Drugs detected at post-mortem (n=295[1])

Drug	Positive cases	
	Number	(%)
BZDs (total)[2]	202	(68.5)
Diazepam	171	(58.0)
Temazepam	85	(28.8)
Oxazepam	47	(15.9)
Other BZD	10	(3.4)
Heroin/morphine	178	(60.3)
Alcohol	167	(56.6)
Codeine[3]	134	(45.4)
Methadone	83	(28.1)
Dihydrocodeine	51	(17.3)
Cannabis[4]	31	(10.5)
Antidepressants[5]	31	(10.5)
Paracetamol	29	(9.8)
Cocaine	27	(9.2)
MDMA (ecstasy)	16	(5.4)
Amphetamines	11	(3.7)
Other[6]	34	(11.5)

1. Data are missing in 5 cases
2. Includes all cases positive for one or more benzodiazepines (BZDs).
3. While codeine was also frequently detected (45%), it appeared in the absence of heroin/morphine in only 18 counts (13%) of codeine positive cases. This could mean (more likely) that codeine is a marker for street heroin or that ingested codeine has been partially metabolised to morphine.
4. Number of cases may be an underestimate as cannabis is not routinely included in post-mortem toxicological analysis
5. Includes tricyclics (n=16), SSRIs (n=14) and SNRIs (n=1).
6. Includes antipsychotics (n=4), ibuprofen (n=7), carbamazepine (n=4), propoxyphene (n=3), tramadol (n=3), zopiclone (n=2), phenobarbitone (n=3), others (n=8).

Table 3.4 shows that heroin/morphine (60%) and diazepam (58%) were the two most frequently detected drugs in cases of drug-related death in Scotland in 2003. However, if individual benzodiazepines are grouped together as a class (as is typically done in published studies of toxicological findings of drug-related deaths in order to avoid attempting to distinguish between different orally ingested benzodiazepines, and metabolites of diazepam), then benzodiazepines were the most commonly detected drugs in this sample (69% of all cases). Diazepam alone accounted for 85% of all BZDs detected. Alcohol was the only other drug detected in more than half (57%) of the sample. Methadone was detected in just over a quarter (28%) of drug deaths.

Cocaine was present in less than 10% of cases indicating that this drug featured in a relatively low proportion of cases in Scotland in 2003 as did other psychostimulant drugs (amphetamines, MDMA).

It is important to appreciate that Table 2.4 contains information only on drugs detected at post-mortem based on data sourced from forensic laboratory toxicology reports, and is not a count of drugs implicated in the cause of death. This is probably why counts for some drugs e.g. diazepam, temazepam and alcohol are somewhat higher than the figures reported in the 'selected drugs involved' table in the GROS annual drug-related deaths report for 2003 (GROS 2004) which are compiled from submitted cause of death information, other information supplied by procurators fiscal and information obtained from confidential forms (voluntarily) sent in by forensic pathologists (personal communication, Graham Jackson, GROS, 2005).

Toxicological differences between injectors and non-injectors

The 300 cases comprised 137 injectors (46%), 131 non-injectors (44%) and 32 cases (11%) where route of administration was unknown. The unknown group was excluded from further analysis leaving a remaining sample of 268 cases. Fifty-nine per cent (59%) of males (n=211) and 23% of females (n=57) were injectors (p<.001). Injectors and non-injectors were compared to examine differences in toxicology, if any, between the two groups. Results of this analysis are set out in Table 3.5.

Table 3.5: Drugs detected by injector status (n=268)[1]

Drug	Injector (n=137)	Non-injector (n=131)
BZDs	91 (66.4%)	92 (70.2%)
Heroin/morphine	131 (95.6%)	28 (21.4%)*
Alcohol	79 (57.7%)	73 (55.7%)
Codeine[2]	99 (72.3%)	26 (19.8%)*
Methadone	15 (10.9%)	57 (43.5%)*
Dihydrocodeine	12 (8.8%)	34 (26.0%)*
Cannabis	9 (6.6%)	18 (13.7%)
Anti-depressants	4 (2.9%)	24 (18.3%)*
Paracetamol	8 (5.8%)	17 (13.0%)
Cocaine	14 (10.2%)	9 (6.9%)
MDMA (ecstasy)	5 (3.6%)	9 (6.9%)
Amphetamines	3 (2.2%)	4 (3.1%)
Missing data	1 (0.7%)	1 (0.8%)

[1]32 cases with unknown injecting status were excluded from this analysis.
[2] see footnote 3, Table 3.4 in this chapter.
*Statistically significant difference between groups (chi-square, p<.001)

Injectors were statistically significantly more likely to be positive for heroin/morphine and codeine while non-injectors were significantly more likely to be positive for methadone, dihydrocodeine and anti-depressants.

Combinations of drugs

Few cases (5.4%) were positive for only one drug at post-mortem. One case was positive for heroin/morphine only, and eight more were positive for heroin/morphine and codeine only. As codeine in the presence of morphine is likely to be a marker for street heroin, these eight cases have been combined with the case positive for heroin for a total of nine heroin/morphine only cases. There were three cases positive for methadone only, one case positive for

benzodiazepines only, one case for alcohol, one case for cocaine, and one case for MDMA (although this case was also positive for gabapentin, an anti-epileptic drug). The vast majority (95%) of cases were cases of poly-drug use.

Poly-drug cases were analysed by types of detected drug combinations. Among the 295 cases for which toxicology results were available, there were a total of 126 different combinations of drugs detected. The seven most frequently occurring drug combinations are set out in Table 3.6.

Table 3.6: Most frequent combinations of drugs detected (n=295)

Drug combination[1]	Number of cases	(%)
HmBzd(Cod)	31[2]	(10.5)
HmAlc(Cod)	30[3]	(10.2)
HmAlcBzd(Cod)	28[4]	(9.5)
MethAlcBzd	16[5]	(5.4)
MethBzd	12	(4.1)
HmAlcBzd	6	(2.0)
AlcBzdDhc	5	(1.7)

[1]Hm=heroin/morphine, Alc=alcohol, Bzd=benzodiazepines, Cod=codeine, Dhc=dihydrocodeine, Meth=methadone
[2] Includes 22 cases positive for codeine
[3]Includes 16 cases positive for codeine
[4]Includes 22 cases positive for codeine
[5]Includes 5 cases also positive for cannabis.

This shows that heroin/morphine was included in four (57%) of the seven most frequently occurring drug combinations detected. However, benzodiazepines and alcohol (both usually orally consumed drugs) featured more frequently, i.e. in six, and in five, respectively, of the seven most common drug combinations. Overall, 36% of deaths (n=107) involved a combination of only orally ingested drugs.

Prescribed drugs

Methadone had been prescribed for 52% of 83 cases found positive for the drug at post-mortem This left nearly half of methadone-positive cases not in receipt of a prescription at time of death i.e. individuals who probably acquired and ingested an illicit source of methadone prior to death. Similarly, diazepam had been prescribed for only 31% of 171 cases found positive for diazepam, leaving two-thirds of positive cases that were not apparently prescribed the drug, and dihydrocodeine was prescribed to only 35% of 51 cases positive for the drug. This suggests that either illicit manufacture and/or diversion of prescribed drugs is a substantial source of drugs for users, and remains a significant issue for health service providers and others in the field.

Blood drug concentrations

The mean (median) blood morphine concentration was 0.269 mg/L (0.200 mg/L) (n=176) with a range of 0.006 – 3.360 mg/L, and the mean (median) blood methadone concentration was 0.517 mg/L (0.309 mg/L) (n=80) with a range of 0.014 – 2.6 mg/L. Ranges of 0.05 - 0.15 mg/L or 0.15 - 0.5 mg/L for morphine, and 0.2 mg/L or higher for methadone are often referred to by forensic toxicology laboratories as 'fatal' levels (personal communication, Lothian and Borders Police Forensic Laboratories, Edinburgh, 2005), and mean values reported in this study fell within these ranges. Forty-one per cent of morphine-positive deaths had

morphine values below the 'fatal' level of 0.15 mg/L and 29% of methadone positive deaths had methadone values below the 'fatal' level of 0.2 mg/L. The pattern of distribution of these blood concentration levels (see Figures A3.1 and A3.2 in Appendix 3) continues to raise questions about the clinical utility of designated 'fatal' levels.

Mean (median) blood alcohol concentration for the group was 119.6 mg/100mL (104.0 mg/100mL) (n=153) with a range of 0.01 – 384.0 mg/100mL. The distribution of values is shown in Appendix 3 (Figure A3.3).

Cause of death findings

'Opiate intoxication' was the single most common (131, 44%) cause of death recorded on the death certificate, and is consistent with the finding that F11.2 (opioid dependence syndrome) was the most common ICD-10 code (158, 53%) assigned by GROS to cases of drug-related death in the sample. Also broadly consistent with the finding that heroin/morphine, benzodiazepines and alcohol were the most frequently detected drugs at death, was the finding that the second and third most common causes of death were 'opiate and alcohol intoxication' (36, 12%) and 'opiate and benzodiazepine intoxication' (21, 7%).

However, alcohol, opiate and benzodiazepine related causes of death were also variously recorded on the death certificate as 'opiate and sedative intoxication' (1, 0.3%), 'opiate and tranquilliser intoxication' (1, 0.3%), 'anxiolytic and opiate intoxication' (2, 0.7%), 'anxiolytic, benzodiazepine and opiate drug abuse' (1, 0.3%), 'presumed heroin and alcohol abuse' (1, 0.3%), 'presumed acute heroin abuse' (1, 0.3%), 'narcotic intoxication' (1, 0.3%), and 'heroin abuse' (1, 0.3%).

Of the 131 causes of death described as 'opiate intoxication', examination of the toxicological findings for this subsample showed that in only 12 (9%) of these cases did detected drugs comprise only opiates – in the vast majority of cases, toxicology identified other drugs in addition to opiates, most frequently benzodiazepines and alcohol. This suggests either under-reporting on the death certificate of other drugs detected or that other drugs detected were not considered to be implicated in the cause of death.

In a number of cases the 'drug' was not specified on the certificate e.g. 'presumed drug and alcohol toxicity' (2, 0.7%), 'chronic drug abuse' (1, 0.3%), 'injecting drug abuse' (1, 0.3%), 'drugs related death' (5, 1.7%), 'mixed drug abuse' (1, 0.3%), and 'overdose of alcohol and drugs' (1, 0.3%), even though toxicological analysis for each of these cases identified individual drugs present.

Comparison between Scotland and London drug related deaths

Table A3.4 (Appendix 3) sets out the results of the comparison of characteristics between the Scottish and London samples of drug related deaths.

In both Scotland and London over half of the deaths were aged over 30, while the average age at death was slightly younger in Scotland. There were no differences between Scotland and London by sex, or detection of morphine (heroin), methadone, alcohol, or MDMA/amphetamine. Thus, over 80% of the deaths were male with approximately 2/3s of deaths positive on post-mortem toxicology for heroin, half positive for alcohol, and 30% methadone. There was evidence of a substitute prescription for over ¼ of the deaths in Scotland and London, and over half of the deaths with a positive toxicology for methadone were being prescribed it at the time of death. There were significant differences, however, in terms of the proportion of deaths positive for cocaine metabolites, benzodiazepines and

dihydrocodeine, prescription - that may reflect different patterns of drug use and treatment between the sites. In London, over 40% of deaths were positive for cocaine (most through crack use) compared to 10% in Scotland. In Scotland, proportionally more deaths were positive for benzodiazepines and dihydrocodeine.

The mean blood morphine and methadone concentrations were significantly lower in Scotland compared to London. It is unclear whether this reflects a true difference in consumption patterns and prescription dosage, or differences in the toxicological testing between the sites. Mean alcohol concentration was higher in the Scottish sample, but did not explain any difference in the mean heroin concentration between Scotland and London.

There were differences in the prison history prior to death between London and Scotland. The London study suggested that 40% of the deaths had a prison history compared to 47% in Scotland. However, 17% of the deaths in Scotland were released from prison within 3 months prior to death compared to 10% in London. Part of the difference may possibly be explained by differences in services provision between the two sites. The larger proportion of deaths with a recent prison history in Scotland, which is a recognised risk factor for drug related mortality, is worthy of further investigation.

There was no difference in the proportion of deaths with evidence of a history of injecting, though a small significant difference in the proportion of deaths where the most recent dose was ascribed to injecting.

Deaths in Scotland were less likely to have a witness (48% vs. 61%), which may explain why an ambulance was called in a lower proportion of deaths (81% vs. 91%). In both Scotland and London, over 80% of the subjects were dead on arrival of the ambulance (if it was called).

Cases of drug related death in Scotland were more likely to live in their own house or flat compared to London (82% vs. 68%), though the place of death was similar with the majority of deaths occurring in the subjects own home or at family or friends home, and comparatively few deaths occurring in public spaces (10, 3.7% vs. 11, 7.4%). In both sites, few deaths were determined to have occurred instantaneously (9.3% vs. 6.8%); London had a greater proportion of deaths where the time between last consumption of drugs and death was unknown (26% vs. 53%).

Finally, in order to monitor and inform prevention activities it will be important to extend the work to compare the risk of death within Scotland and between the sites i.e. what evidence is there that problem drug users in Scotland have a similar, higher or lower mortality rate than problem drug users in London or elsewhere? In part this can be accomplished by combining mortality statistics with prevalence estimates, but ultimately requires periodic mortality cohort studies.

Key points

- There was potential opportunity to intervene and save the lives of these cases of overdose but it was not taken up in many cases. That most cases had died by the time the ambulance arrived and that intervention, when attempted by others, involved CPR in less than half of cases where a witness was present is a matter of concern and a training and education issue for drug users. The persistent practice of attempting to resuscitate overdose cases by infliction of pain such as cold water or slapping, is an especial matter of concern.

- Benzodiazepines were the single most commonly detected class of drugs at post-mortem. In general, the predominant drugs found 'on board' at the time of death continue to be heroin/morphine, benzodiazepines and alcohol in Scotland. Few cases were positive for psychostimulants, in particular cocaine.

- A relatively high proportion of cases did not inject any drugs prior to overdose and death. A high proportion were also positive on toxicological analysis for only orally consumed drugs.

- Nearly half of methadone related deaths, and two-thirds of diazepam and dihydrocodeine positive deaths involved illicitly obtained sources of these medications.

- The same drug-related cause of death may be recorded on the death certificate by forensic authorities in various ways. In many cases, toxicology identified drugs other than those noted on the death certificate

- Some of the key characteristics of drug related deaths were similar between Scotland and London (and share similarities with audits of drug-related deaths worldwide). For instance:-

  - 80% were male
  - Half were over 30
  - 2/3s involved heroin
  - 30% methadone
  - Vast majority involved poly-drugs with alcohol present in over half
  - Few deaths occurred instantaneously
  - Most occurred in the subjects' own home or the home of family or friend
  - When an ambulance was called most cases were dead on arrival

- In Scotland and London about ¼ of cases were on a substitution prescription, and over half of cases with a positive toxicology for methadone were in receipt of a prescription.

- In Scotland, a higher proportion of deaths were associated with recent prison release (17% vs. 10%).

- Other key differences include:-

  - Higher number of deaths positive for dihydrocodeine and benzodiazepines in Scotland, and higher number of deaths positive for cocaine in London
  - Higher number of deaths in receipt of dihydrocodeine substitute prescription in Scotland
  - Lower average blood concentration of methadone and morphine in Scotland.

Chapter 4: Social circumstances in the 6 months prior to death

What is in this chapter? This section contains information on the social circumstances and living arrangements of all people for whom data were available within health, social work and independent sector case records covering the six months prior to their deaths. The purpose of this chapter is to try to understand the social context within which these individuals functioned as part of their community – their personal characteristics; where they lived and with whom; how they spent their time; whether they had experienced particular life difficulties in the period prior to death. This information could help identify risk factors which may have impacted on the circumstances of their death or advise on those areas of the family or community in which an intervention might reduce the negative impact of the event.

Where did the information come from? Data were drawn from two different sources in order to build as full a picture as possible.
1. Information was extracted from all available case records (health, social work and independent sector) relating to the 237 people who had been in contact with services in the six months prior to a drug-related death in 2003.
2. Information on occupation, relationships, contact with family and friends was drawn from the 300 files obtained from the offices of the Procurator Fiscal.
When necessary, data from the different sources have been described together to add to the richness of the available information.

Introduction

Obtaining information from personal case records should help to individualise these deaths, giving us a unique opportunity to create a more detailed psychological and social profile of all individuals that have been categorised as dying in drug-related circumstances in Scotland in 2003. This process also gives an opportunity to understand the quality of information that services gather, as part of normal practice, on those who attend health and social care services.

The individual, their family and social supports

Elements of this information, mainly contained within fiscal files, have been presented in a previous section of this report. This chapter will describe information gathered from all available health, social work and independent sector case files for those 237 people who had attended services in the six months prior to their deaths.

The individual

Of those 237 people in contact with services during the six months prior to death, information on ethnicity was available for 117. Of these, 114 (97%) were described as "white". The remainder were from minority ethnic groups. Of 300 fiscal files, 190 cases identified ethnicity. All were described as "white".

Information on educational attainment is available for 123 people (52%). Of the 123, 49 left school before the age of 16 years (40%), 59 left at 16 years (48%)

and 15 left at 17/18 years (12%). There was no information on qualifications attained.

Information on training and initial employment is available for 119 people (50%). After leaving school 13 (11%) went onto further education, 27 (23%) went into vocational training, 57 (48%) went into employment and 22 (18%) were unemployed.

Activity and employment

Of those 237 people in contact with services during the six months prior to death, up to date information on employment status during this period was scant in all casefiles making detailed interpretation of this data difficult. Information on income was available for 125 of the 237 (52%). This showed that, of the 125, 105 (84%) were unemployed during the six months prior to death. There was no information on daily activity or routine.

Fiscal files did contain some occupational details in 123 (41%) of the 300 files available. Fifty-seven (46%) of these people were unemployed and 6 retired. In the case of the other 177 people (59%) however, no information was available on occupational status. Twenty-six people (including 5 whose occupation was not recorded in the case notes) were working at the time of their death, representing 14% of those where data on employment status were available. Of the 162 people not working at the time of their death, 29 (17%) were claiming unemployment benefit and 13 (8%) were on sickness or incapacity benefit. However, in the remaining 74% of unemployed people, no information was available.

Case study
A male retired divorcee living alone in his own residence on sickness benefits. There is no history of polysubstance misuse or offending. He has a lifetime history involving numerous deliberate attempts to overdose with the last occurring over 10 years ago. These had resulted in brief involvement with psychiatric services. He has never received a formal psychiatric diagnosis but records show a history of anxiety and depression. There is also a history of chronic back pain of unknown aetiology for over 20 years, resulting in retirement through ill health. His general practitioner prescribed opioid analgesia (including morphine), benzodiazepines and anti-depressants. He died of acute morphine poisoning and appears to have taken a deliberate overdose of his prescribed morphine tablets.

This is a case of an atypical gentleman who presented with chronic pain and possible dependence associated with his chronic opioid medication and psychological problems. Several factors can be identified which may have predisposed this gentleman to take a deliberate overdose but there are no obvious precipitating events or circumstances prior to death.

Interpretation

Employment and meaningful activity is well recognised as having an impact on ability to progress in terms of moving on from a life dominated by drug misuse. Despite this there is very little available up to date information in current casenotes regarding occupational status or daily activity in this population. From the limited information available, however, there is a suggestion that this

population represents a broad range of skills and occupations. It should also be recognised that a small number were retired or suffered chronic illness.

Living arrangements

Of 138 for whom information on living arrangements was available, 74 (54%) lived alone and 64 (46%) lived with others. Twenty nine of those were recorded as living with a partner, 32 with parents and three with dependent children. Data were unavailable for the remaining 98 cases.

Supportive relationships

Information was sought from records on the nature of relationships between the deceased and their family and friends. Specifically information was sought on whether people had felt close to any particular person and whether there had been any difficulties recorded in the relationships with family and friends in the six months prior to death.

Data relating to these questions were largely missing with 159 people having no mention of the quality of their relationships in any recent records. Seventy eight (33%) did contain such information. Of these, 69 (88%) suggested a close/supportive relationship with their family while nine records (12%) did not.

Of the 300 fiscal files, information was available on relationships for 207 (69%) people. They state that, at the time of death, 98 (33%) were described as being 'in a relationship' while 109 (36%) were 'unattached'. In some cases they also record contacts with friends and family. Regarding their family, data were available for 214 (71%) people. Of these 214, 167 (78%) had had contact within three days of death, 37 within the last few weeks and six within the last year. Regarding friends, data were available for 203 (68%) people of whom 188 (93%) had contact within 72hrs, 13 within the last few weeks and one within six months.

Interpretation

The lack of information in this area implies that services do not routinely gather or update information on living arrangements or supportive relationships. Even when this is collected, the information is relatively rudimentary and limits the degree of interpretation that is possible regarding the social support available for an individual and the impact this may have on individual vulnerability. Where data were available, the majority of people who had died of drug related causes, who had been in contact with services during the six months prior to that death, showed characteristics not dissimilar to the general population – they showed a broad range of educational attainment and many progressed to employment or training immediately after completing school, though by the time of death the majority were unemployed; they lived in a range of environments, with the majority in stable accommodation; many were in a positive relationship and were not socially isolated, retaining contact with their friends and family. It must be stressed however, that, due to the degree of missing information in casefiles, this interpretation cannot be generalised.

Case study
Young female. Died of acute intoxication with methadone, benzodiazepines and amitriptyline. She was registered as unemployed (but notes state she was a sex-worker) and was homeless as her long-term relationship had ended. She had been admitted to hospital following a deliberate overdose but discharged herself against medical advice and was found dead that evening.

She had a complex past history including a poor relationship with her parents resulting in foster placement from the age of eight years. She reported sexual abuse while in care. In 1992 it is recorded that she cut herself following an argument with a boyfriend. The notes then record a long history of deliberate self-harm. Her GP treated her for depression from 1992. All of her children had been taken into care.

She was involved in a wide range of drug-related criminal activities from her teens. She was referred for detoxification twice but she always returned to drug misuse. She was prescribed methadone and diazepam briefly but failed to attend appointments and her case was closed. She tested positive for Hepatitis C in 1998. In the six months prior to death, her casenotes describe chaotic drug use. Although she had a history of custodial sentences, she had no periods of custody in the six months prior to death.

Relationship with children

Casefiles show that, of those 237 people in contact with services during the six months prior to death, 119 (50%) had children while 55 (23%) did not. No information was available in 63 (27%) casefiles. The 119 who were identified as parents, had 185 children. Twenty seven children (15%) were under five years of age, 110 (59%) were aged 5 to 16 years and 48 (26%) were over 16. Seventeen of these children (9%) were recorded as living with a parent who suffered a drug related death. 78 (42%) were living elsewhere and 2 were in care. No information on where these children were living was available in 88 (48%) casefiles. Of 59 females who died, casefiles record that 16 (27%) had children in their care at the time of their death.

Information was sought from fiscal files only on children in the care of the deceased. Thirty two people (16 females, 16 males) are recorded as having 54 children in their care at the time of death with 16 having one child, 11 having two, four having 3 and one person caring for 4 children. There were 227 cases where there were no children in the subject's care at the time of death. For 41 people the situation regarding childcare could not be determined.

The CSC and fiscal file datasets were manually compared using unique identifiers, to determine any similarities or differences between the populations. 12 of the 16 people identified from casefiles as having responsibility for children were also identified as having childcare responsibility in the fiscal files. Of the 32 people identified in the fiscal files as having responsibility for children, the CSC data showed that 11 had childcare responsibilities. In five cases, the CSC files stated that their children were cared for elsewhere while in 16 cases the situation was unknown or not recorded in their files.

Interpretation

Drug users often have complex lives and we must be cautious interpreting these data. For example, a drug misuser may not have day to day responsibility for child care but may see and support their child regularly and be a significant part of their life. It is clear however, that of 119 parents who died as a result of a drug-related death, fiscal files suggest that 32 were responsible for caring for their children during the six months prior to death. Fifty four children were being cared for by a drug user who died. Three quarters of all affected children of which we are aware were of school age.

The comparison of the two datasets implies that the quality of basic information on childcare arrangements is generally poor with no updated notes on the situation available in the six months prior to the death. Casefiles had a record of child care responsibilities in less than 50% of those identified in fiscal files. This means that the information informing decision–making around family support and child-protection in day to day practice may be inaccurate. In the context of recent reports (eg. "Hidden Harm") and published advice on improving practice (e.g. "Getting our Priorities Right") there are still people in contact with services about whom we know little regarding their parental responsibilities. If available, this information would help identify the risks to the child and allow staff to better identify the needs of that family. It must also be recognised that, even if a child is not directly cared for by a parent who dies, they will inevitably be impacted upon by that death. If they are not known, appropriate support may not be made available for them.

Environment

This section contains information regarding where the person lived – their accommodation and broader environment.

Environment – living accommodation

Data on accommodation *at the time of death* have been presented in a previous section of this report. Of those 237 people in contact with services during the six months prior to death, general information was available in 168 casefiles (70%). Of the 237, only 117 (49%) were recorded as living in their own house or flat. Thirty one (13%) were in unstable or temporary accommodation. A quarter of people had stayed in their most recent accommodation for less than six months, half between 6 months and five years and a quarter had lived for over five years at the same address. Only eight people were recorded as having been roofless during the six months prior to death. Information on Prison is contained in the next chapter.

Life events

Information was sought from service casefiles on history of traumatic or significant events in the six months prior to death. Sixty-seven (26%) of the 237 cases identified via clinical records had one or more significant events recorded in their notes within the six months prior to death (Table 4.1). Eleven recorded two significant events and four cases recorded three events each.

Table 4.1: Number and type of significant events recorded in case notes of drug related death cases in the 6 months prior to death (n=67)

Significant Event	Number
Separation due to marital difficulties or broken off a steady relationship	25
Bereavement	17
Child custody issues	12
Physical illness presented for the first time	10
Serious injury, illness or assault to close relative	9
Serious problem with a close friend, relative or neighbour	6
Psychiatric illness presented for the first time	5

Interpretation

Significant life events do appear in the records of a significant minority of people who suffer a drug-related death. As drug users experience many such events and present their difficulties to the professionals working with them regularly, it is likely that other relevant events are not recorded. Clinically it is well recognised that substance misusers do experience high levels of trauma and negative life events but it is impossible to determine the significance of the events recorded for these cases. It is however essential that staff take steps to ensure that they are fully aware of the stresses being experienced by an already vulnerable group, as this may allow early intervention and support.

Conclusions

This chapter explores important social variables that may have a significant impact on the individual's ability to cope with negative life events. This information should have been available for all individuals in contact with services and it is of concern that in many cases it is not. It is likely that more detailed information was recorded at the time of initial assessment by a service. The limited information that was available with regard to the previous six-month period, however, highlights the need for staff to regularly review individuals' social circumstances. This is of particular importance regarding child care responsibilities. With the limited clinical information available this study has identified no social risk factor, knowledge of which will prevent drug-related deaths.

Key Points

- Information in casefiles, as it is currently collected across Scotland is sparse, inconsistent and difficult to cross-reference. A standardised, well-validated method of collecting agreed data on all drug deaths would ensure that any relevant social risk factors may be identified.

- The lack of up to date relevant information in many of the casefiles, which would be required to organise an integrated care plan is a concern. The availability of rich, up to date information must form part of good practice in the management of drug misusers.

- Risk assessment is not routinely recorded. Good quality standardised information will allow identification and prioritisation of potential risk factors in this vulnerable population which could reduce future morbidity and mortality.

- Staff in all settings should be trained to comprehensively assess drug misusers and to ensure that regular updates of essential information (e.g. regarding childcare responsibilities, life events etc.) are recorded to allow improved awareness of a person's needs and greater evaluation of the significance of personal and social factors.

Chapter 5: Service contacts in the 6 months prior to death

What is in this chapter? The information below sets out the nature and frequency of contact with services and identifies the overall patterns of these. The information described in this section should be regarded, and read, as population trends rather than the contact patterns of individual cases.

Where did the information come from? Data were drawn from different sources to build a comprehensive picture:
1. Records of care/interventions were identified and accessed for 305 (96%) people who *ever* had contact with services. No records were available for 12 cases. Of the 305 for whom records were available, 237 (78%) had had contact with one or more services during the 6 months prior to their death and information was extracted from the records of all services known to be involved in their care. For the remaining 68 people, their casefiles showed no record of any service contact in the 6 months prior to their death.
2. Information was collected from hospital returns data (ISD databases SMR00/01/04) identifying 227 (72%) cases who received hospital care in the year prior to their death.
3. Two hundred and seventy-four of the 317 drug deaths (86%) were known to the Scottish Criminal Records Office.
4. Seventy of the drug-related deaths had been in a Scottish Prison in the six months prior to death and SPS files were accessed to add depth to the CSC dataset. 34 people had been offered formal Transitional Care and information was made available regarding whether this was accessed and outcome.

Introduction

"Integrated Care for Drug Users, Principles and Practice" (EIU 2002) acknowledges that people with drug problems often have multiple needs and do not access services in a uniform manner. They will move in and out of contact as needs arise, accessing a range of different agencies in an ad-hoc way. This poses difficulties for services in terms of ensuring that they give an appropriate response to meet the user's needs and collaborate effectively with partner agencies to maximise outcomes. This section considers information from diverse sources to help understand this process and identify potential areas where a timely intervention may impact on outcome.

Mapping contact with health and social care services

It is recognised that being engaged in a process of care and treatment has a positive impact on outcomes, including drug-related deaths. In order to co-ordinate and integrate the care that is provided to individuals it is important to recognise the extent to which people access more than one service and the various interventions which they may be accessing from these services.

Of those 305 people who died of drug-related causes in Scotland in 2003 and for whom records were available, 68 people had no recorded service contacts at all during the six months prior to death. Data from the health, social work and independent sector casefiles of the 237 people who had been in contact with services during the six months prior to death were examined to determine the extent of service involvement, including their degree of engagement, the number

of services involved (including whether these were generic or specialist) and the purpose of attending – including the types of interventions received.

Degree of engagement - time intervals between last service contact and occasion of drug-related death

The table below (Table 5.1) describes the number of people who were in contact with any service during the six months prior to death and the time interval between last recorded contact with services and death. Of the 237 cases that had contact with services in the 6 months prior to their death, 136 (57%) were still in contact with at least one service within one month of their death.

Table 5.1: Number of cases in contact with any service at any month in 6 months prior to death (n=237)

Number of cases	Month 1 (Prior to death)	Month 2	Month 3	Month 4	Month 5	Month 6
In contact with services	136	186	213	226	233	237
Last contact with services	136	50	27	13	7	4

Number of agencies involved

Table 5.2 shows the number of agencies accessed by individuals in each of the six months prior to death. This table does not describe multiple contacts with any single agency. In their last month prior to death 136 people had 175 agency contacts on at least one occasion. During this period, over half of those who experienced a drug-related death in 2003 had documented contact with only one service. Some accessed many services though none accessed more than 8 services in any one month.

Table 5.2: Number of agencies accessed by each person

Number of individual agencies accessed by each person	Month 1 Prior to death (n=136)	Month 2 Prior to death (n=186)	Month 3 Prior to death (n=213)	Month 4 Prior to death (n=226)	Month 5 Prior to death (n=233)	Month 6 Prior to death (n=237)
1	104	116	119	106	107	107
2	50	60	58	63	59	54
3	16	22	23	24	25	30
4	4	9	5	4	5	7
5	1	4	3	6	4	4
6	0	0	0	4	1	1
7	0	3	0	1	0	1
8	0	1	1	1	0	0
Total	175	215	209	209	201	204

Services used

Table 5.3 shows the main services accessed in each NHS Board area at any point during the six months prior to death. The list of services is not exhaustive – i.e. people also had contact with additional agencies during this period, but in very small numbers. The table illustrates that the pattern of contact is not uniform

across Scotland, with different services in each area apparently having more contact with this group. This may reflect the local pattern of services available.

Some patterns do appear across Scotland as a whole. Significant contact was with general practitioners (GPs), with 183 (77%) of all those in contact with any service accessing GPs during this period. General Practitioners may have some formal links with specialist services through "shared care" arrangements. In most areas, the majority of contact was not with specialist drug services but with generic providers. Over all only 40 (17%) were known to specialist services, while in most areas there were significant contacts with psychiatric services (41 people, 17%), acute services – including Accident & Emergency (59 people, 22%) and NHS outpatients of various types (37 people, 15%).

In total, 71 (30%) were known to Social Work over all, though one area (NHS Glasgow) is responsible for over half of all Social Work contacts identified. In most other areas there was limited Social Work contact recorded. The Glasgow data regarding Social Work teams allows a break down of specialist/generic involvement. This shows that, of the 42 people in contact with Social Work, 11 were being seen by a "generic" team, four by the "homelessness" team and 10 by Criminal Justice. Only 17 (40%) were being seen by specialist drug & alcohol Social Work staff. Organisation of Social Work services will vary from area to area.

Table 5.3: Number of drug-related deaths accessing specific services during 6 months prior to death by NHS Board area (n=237)

	GP & Primary Care team	Social Work	Psychiatry	Acute services (& A&E)	NHS Out-patients	Specialist drug & alcohol services	Voluntary sector	Residential
Argyll & Clyde	17	3	0	7	2	4	1	0
Ayrshire & Arran	10	3	7	2	1	5	3	1
Borders	1	0	0	0	0	0	0	0
Dumfries & Galloway	3	0	2	2	1	0	0	1
Fife	7	3	9	4	2	1	0	0
Forth Valley	9	1	1	6	1	4	0	0
Grampian	23	9	4	2	9	0	0	1
Greater Glasgow	57	42	0	17	11	6	4	4
Highland	3	0	3	0	0	1	1	0
Lanarkshire	14	8	7	7	2	6	0	0
Lothian	25	10	4	8	5	8	0	2
Tayside	14	0	3	4	3	3	0	0
Western Isles	0	0	0	0	0	0	0	0
Scotland	183	71	41	59	37	40	9	9

Purpose of contacts

Table 5.4 describes the main reasons for contact with services in each of the six months prior to death. It identifies the number of times a particular type of contact was made by different people in any one month. It does not capture multiple interventions delivered to the same person in the same month, e.g. one person attending for a "medical consultation" three times in the month before death would only be noted as one event.

Table 5.4: Reasons for contact with services in the 6 months prior to death.

Reason for contact	Contacts in Month 1	Contacts in Month 2	Contacts in Month 3	Contacts in Month 4	Contacts in Month 5	Contacts in Month 6	Total contacts over 6 months
Medical consultation	73	101	98	105	98	103	578
Medical emergency (Including A&E)	13	12	6	6	12	8	57
Other medical care	5	8	5	8	6	7	39
Substance misuse assessment	0	6	2	5	3	2	18
Detoxification	0	6	5	2	4	1	18
Specialist substitution prescribing programme	8	9	11	11	8	10	57
Out-patient psychiatry	8	13	15	12	10	12	70
Emergency psychiatric care	5	2	4	3	2	4	20
Psychiatric hospitalisation	0	5	4	4	2	1	16
Case management (Social Work)	29	29	27	29	28	24	166
Psychosocial interventions including Counselling	8	3	6	7	11	8	43
Other	32	23	28	22	19	27	151
Total	181	217	211	214	203	207	1233

Forty-seven per cent (47%) of all contacts recorded in the six months prior to their death were "medical consultations", the majority with GPs in primary care. Only 5% of contacts were described as "specialist substitution prescribing programmes". However, 66 people (24% of those in contact with services) were prescribed methadone during the 6 months prior to death, with 40 still prescribed at the time of death. 80% of all information on methadone prescribing was extracted from General Practitioners' notes, showing that, for the drug related death population, the majority of methadone prescribing was in the primary care setting with a significant proportion of these "medical consultations" relating to replacement prescribing. "Shared care" schemes operating throughout Scotland are modelled on the premise that stabilised drug users are generally seen in general practice and those whose drug use is more chaotic or problematic are cared for by specialist drug services. The data presented here may imply that this type of "shared care" model is not operating in practice in many areas of Scotland as it would be expected that the more chaotic users (who would be attending the "specialist services" in such a model) would be more at risk of drug-related death.

In Scotland, General Practitioners have taken on a more prominent leading role in the delivery of methadone replacement prescribing – reflecting a lack of capacity and waiting lists in specialist services. This may explain the apparently skewed balance of prescribers in this investigation.

"Case management" – delivered by Social Work - accounted for 12% of contacts while counselling – supposedly a key element of care for drug misusers in treatment - accounted for only 3% of all contacts. Appendix 4 contains a list of all contacts defined as "other" in Table A4.1.

It is notable that the majority of the contacts (other than with a doctor or social worker) appear to be in emergency situations (A&E, emergency psychiatric care).

Case study
Young adult male. Post mortem states he died of cocaine intoxication. Diagnosed as suffering from paranoid schizophrenia for 15 years resulting in three admissions to psychiatric hospital. He was also known to be opiate dependent and a user of cocaine and crack cocaine. He was an IV drug user. He was unemployed having never worked, living on benefits in his own flat.

The 6 months prior to his death were dominated by residential treatments. He was admitted to a residential rehabilitation facility for 4 months before discharge and immediate admission to another. On the day of his death, he self-discharged, returned home and injected cocaine in the presence of an acquaintance. He was found dead the next morning.

He was under the Care Programme Approach and was present at two care management meetings 4 and 6 months prior to death. These were attended by forensic psychiatry and the homeless social work team all of whom were involved in his ongoing management. The police report suggests he was in receipt of a depot anti-psychotic drug – but toxicology does not show this to have been present at death.

Interpretation

This is not an unknown population. Only 68 (21%) of those who died of drug-related causes in Scotland in 2003 and for whom records were available had had no recorded contact with any agency in the six months prior to death. Of the 237 who had service contact, many were accessing multiple services and more than 50% were still in contact with at least one agency at the time of death. The agencies involved include specialist services, but contact was dominated by attendances at generic services – mainly general practitioners but also psychiatric services, acute hospital services (including Accident & Emergency), NHS out-patients and social work. Contacts were often for the purpose of delivering medical interventions or a response to an emergency situation. There is a notable lack of recorded contact for delivery of counselling services or other psychosocial interventions. This pattern of contact implies that, if services are to have an impact on drug deaths, this will have to reflect activity in the more generic health and social care settings – areas where concern regarding drug use may not be the priority of the professional concerned during that contact.

More detailed analysis of the specific treatment received from health services is contained in the next section.

Contact with Health Services

This section describes in more detail the care of individuals who had received medical treatment for drug misuse and, when possible, compares the clinical care received by those who were in treatment with national clinical guidelines and considers whether there was anything that "services" could have done, or could do in the future, to prevent death. Data were extracted from national ISD databases relating to episodes of health care and, when these data are used, the definitions reflect those under which these data were recorded by the staff responsible for their care.

Hospital admissions

Initial analysis of data obtained from selected ISD databases (SMR 00/01/04) indicates that in the year prior to death there were 1435 recorded episodes of hospital care for this population (n=317). This does not include attendances at Accident & Emergency Departments not resulting in admission, as ISD does not collect these data. Of these 1435 episodes, 734 resulted in hospital admissions (51%), of which 198 (27%) were discharged the same day, 220 (30%) after one day and a further 95 (13%) after two days. Five hundred and thirteen (70%) of all hospital admissions for this population were for two days or less.

SMR returns recorded general reasons for admission for only 340 of these 734 episodes: 296 to a general hospital and 44 psychiatric admissions. Reasons for admission were not recorded for the remaining 394 admissions. The majority of general hospital admissions for which this information was available were classed by ISD as having been for "observation, treatment or investigation" although 49 (17%) were for "self-inflicted injury" and a further 26 (9%) for "accidental or other injury".

Psychiatric treatment

In the six months prior to death 86 (36%) people were prescribed anti-depressant medication. Of these, 75 (87%) were prescribed these medications by their general practitioner. Twenty people were prescribed anti-psychotic drugs with two receiving Clozapine (a drug requiring close review by mental health services) and one received a depot antipsychotic which would require regular contact with professionals to administer. Table 5.5 sets out the drugs prescribed.

Table 5.5: Medical treatments for psychiatric disorders

Drug prescribed			Number of people
Type of drug	Drug name	Trade name	
Antidepressants	Venlafaxine	Efexor	18
	Citalopram	Cipramil	18
	Fluoxetine	Prozac	15
	Trazodone	Molipaxin	10
	Paroxetine	Seroxat	9
	Amitriptyline	Tryptizol	9
	Dothiepin	Prothiaden	6
	Doxepin	Sinequan	1
Antipsychotics	Olanzapine	Zyprexa	9
	Haloperidol	Haldol	3
	Chlorpromazine	Largactil	3
	Clozapine	Clorazil	2
	Zuclopenthixol	Clopixol	1
	Flupenthixol	Depixol	1
	Trifluoperazine	Stelazine	1

In the casefiles of the 273 people who had been in contact with services during the six months prior to death, 83 had at least one episode of psychiatric care recorded. Casefiles show that five people had records of at least five different treatment episodes in the last six months.

SMR04 data shows that 44 of the psychiatric contacts made by these 83 people required hospital admission. Records were available for 28 of the psychiatric contacts. Table 5.6 sets out the nature of these 28 contacts. The definitions reflect those recorded by the clinicians delivering the care.

Table 5.6: Psychiatric service contacts

Nature of contacts	Number of contacts
Psychiatric assessment	4
(Thoughts of) Self harm	4
Anxiety	3
Paranoid schizophrenia	3
Personality disorder	3
Depression	2
Suicidal ideation	2
Mental health review	2
Substance misuse	1
Schizophrenia	1
Emergency psychiatric care	1
Alcohol detoxification	1
Paranoid delusions	1

In SMR04, aftercare details are recorded for the 44 episodes of psychiatric care that required hospital admission, relating to the care of 29 people. Of these episodes, 22 (50%) cited 'GP' as the planned aftercare arrangements, nine (20%) cited outpatient clinics, four (9%) community care teams and two psychiatric day hospitals. Two were transferred to psychiatric wards for ongoing care. No details were recorded for the remaining eight episodes. No referrals to Social Work or any voluntary agency were recorded in any casefiles following these episodes of care.

Previous non-fatal overdose

One hundred and thirty eight (50%) of the people who were in contact with services in the six months prior to death had details of previous overdoses recorded in their notes. The tables below (Tables 5.7 and 5.8) set out the assessed nature (i.e. accidental or deliberate) and frequency of overdoses and the treatment received for each overdose event. In some cases, other than to mention that an overdose had occurred, no specific details were available.

The tables show that four people had been treated for at least four non-fatal overdoses in the six months prior to death. The number seen at A&E exceeds the number seen by ambulances indicating that some overdoses arrived at A&E departments via means other than ambulance conveyance. This suggests that ambulance records of overdose attendances underestimate the total number of overdoses attended to by professional staff. Of the total number of people admitted into hospital for overdose, 44 (57%) were psychiatrically assessed, and in most cases (95%), psychiatric follow-up was arranged. Of these, however, less than half (43%) presented for follow-up and no further action was recorded for those who did not attend.

Table 5.7: Number of people experiencing non-fatal overdoses by type (n=118)

Number of overdoses	At least 1	1	2	3 or more	Type 1	Type 2	N/K
Ever	138	64	29	37	43	51	44
Last 6 months	31	21	8	2	9	13	9

Type 1 – accidental
Type 2 - deliberate

Table 5.8: Treatment received by episode of non-fatal overdose

OD before death	Ambulance called		Treated at scene		Seen at A&E		Admitted to hospital		Psychiatric diagnosis		Follow-up arranged		Attended?	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Last	27	2	7	8	59	1	50	8	23	14	21	21	7	9
2nd Last	14	1	5	1	29	0	16	4	13	8	12	10	4	3
3rd Last	6	0	1	1	12	0	9	1	6	1	6	2	5	0
4th Last	1	1	1	0	4	0	2	1	2	1	3	0	2	1
Total	48	4	14	10	104	1	77	14	44	24	42	33	18	13

Specialist treatment for drug or alcohol problem in the last 6 months

Data obtained from casefiles indicated that in the six months prior to death, only 38 (12%) of the 317 people had at least one contact with a specialist drug misuse service. Details relating to the majority of these contacts were not routinely noted in clinical records. Table 5.9 below summarises the interventions for the 47 recorded contacts by these 38 people.

Table 5.9: Type and frequency of specialist drug treatment contact (n=38)

Intervention	Number of contacts
Drug dependence	10
Assessment	8
Drug detoxification	8
Did not attend	4
Referral	4
Alcohol detoxification	3
Residential rehabilitation	3
Initial contact	2
Treatment for hallucinations	1
Methadone reduction programme	1
Alcoholics Anonymous	1
Day hospital attendance	1
Crisis intervention	1
Total	47

Medical treatment for a drug problem

There is a relationship between dose and outcome in methadone prescribing with higher doses associated with better clinical and harm reduction outcomes. Good practice is for methadone prescribing to be delivered alongside various psychosocial or counselling interventions, an approach which has also been

associated with better outcomes. Prescribing guidance recommends an optimal dose range of 60-120 mg of methadone per day. Risks (including those of overdose) increase when methadone is reduced or stopped. National Clinical Guidance on prescribing for drug misusers makes it clear that methadone prescribing should only follow adequate assessment of extent of drug problems and dependence. Initial methadone dispensing should involve supervision of consumption with progress to "take home" dependent on successful stabilisation (Drug Misuse & Dependence. Guidelines on Clinical Management HMSO 1999).

Seventy-eight people were receiving medical treatment for a drug problem in the six months prior to death, of which 66 were prescribed methadone by their general practitioner or specialist service doctor. No records of other specific medical treatments for drug misuse were recorded – though in three cases it was noted that one had received "detoxification"; one "assessment" and one "tolerance testing".

Identification of dependence

All case records available for those who had ever had access to any services (n=305) were searched for documented, objective evidence of the person having a recognised dependence syndrome. Only eight case records (2.6%) had this information recorded.

Methadone dose

Sixty six people were prescribed methadone during the six months prior to death. Only 40 were prescribed methadone by their time of death. For one person, information on dose or duration of prescription was unavailable in any case record.

For the remaining 39, dose range was from 4 to 100 mg (mean 53.9; SD 24.1). Sixteen people (34%) were prescribed 60 mg or more while 24 (66%) were prescribed less than 60 mg. When dose at death is compared with their previous recorded dose it can be seen that 21 people (54%) were having their methadone dose increased and 8 (20%) were being reduced. In 11 (28%) cases there is inadequate information in casefiles to determine prescribing plans or trends.

People had been on methadone treatment for varying periods. No information was available on duration of treatment in 9 cases. Duration of prescription ranged from 2 days to over 7 years (mean 19.6 months; SD 26.93). Four had been in treatment for up to 1 month, 10 between one and 6 months and four between 6 months and one year. A further four had been treated for up to 2 years, three up to 5 years and four more than 5 years.

Prescribing information was available in casefiles for 14 of the 26 no longer receiving prescribed methadone. No records were available for the remaining 12 people. When available, records show that prescriptions ended between two days and eight months before death occurred. Table A4.2 in Appendix 4 displays these data in more detail.

Dispensing arrangements

Of the 40 who were receiving prescribed methadone at the time of their death 27 (68%) collected their methadone daily, either six or seven days per week. One person collected their prescription three days per week, five collected once a week and one person did so every two weeks. Arrangements for the remaining six cases were not recorded in casefiles.

Information on method of consumption was available for 32 of the 40 people receiving prescribed methadone at their time of death. This is displayed in table 5.10. Six collected their methadone from a treatment centre of whom five consumed their methadone under supervision. Of the 26 people who collected their methadone from a community pharmacy, 21 (81%) consumed their methadone under supervision on the pharmacy premises and five (19%) consumed at home.

Table 5.10: Method of collection and consumption of methadone

Method of collection/consumption	Number of cases (Frequency)	Mean dose (mgs)	Range (mgs)
Collection from treatment centre – Supervised consumption	5	43	10-80
Collection from treatment centre – Consumption at home	1	60	60
Collection from pharmacy – Supervised consumption on premises	21	58	20-100
Collection from pharmacy – Consumption at home.	5	44	4-80

Of the five people who collected from the pharmacy and consumed at home, two were homeless and another two were on anti-depressant medications – implying they had complex problems. Notes recorded no evidence of injecting for any of these people in the last six months but no other indicators of stability were noted. All were unemployed and none had attended any specialist drug treatment services.

Case study
A 35 year old man who was started on a methadone prescription for 50 mg daily on Tuesday. He died on Friday of a heroin, methadone and benzodiazepine overdose.

No record of assessment, prescribing decisions, dispensing arrangements nor access to counselling or support was available in any casefile.

Non-specialist Detoxification

Clinical case notes recorded 26 people attempting to abstain or detoxify from drugs in the six months prior to death. Nine (34%) were recorded simply as self-detoxification. A further 10 (38%) were aided by a prescription from their GP, and seven cases (27%) sought abstinence by other means. Outcome data were recorded for 23 of these cases. Seven (27%) successfully completed detoxification and appeared to remain drug free until death. 11 (42%) completed detoxification but relapsed, and the remaining five (19%) did not complete their detoxification. Few details are recorded.

Did not Attend (DNA) rates

Very little was recorded in service case notes and/or other information systems regarding 'Did Not Attend' rates. This cannot therefore be commented on.

Waiting times

Of the 237 cases in contact with services in the six months prior to death, 19 (8%) were identified to be on any waiting list. Only two of these were on a waiting list for a drug treatment or intervention service.

Interpretation

Of the 317 people who experienced a drug-related death in Scotland in 2003, only 66 were prescribed methadone during the six months prior to death. Of these, 26 (39%) were no longer prescribed methadone by the time of death. There was little information regarding the assessment carried out prior to initiation of a prescription with only 8 people having any records showing assessment of dependence prior to prescribing. Records for those prescribed were also limited with inadequate information available in 28% of casefiles to determine whether prescriptions were increasing or decreasing. Of those prescribed methadone at the time of death, 66% were on sub-optimal doses of less than 60 mg though 54% were increasing their doses. Records of dispensing arrangements show that those 5 people who were taking their methadone home may not have been stable with two described as homeless and two on antidepressants. Only 11% of people on methadone received any recorded counselling interventions during that period. Only one person prescribed methadone at the time of death was also in receipt of counselling.

The quality of recording in casefiles was often poor making judgements of the quality of care received impossible in many cases. In those where information was available, it is clear that there were inconsistencies in the delivery of methadone prescribing for this group, some of which fell outside the standards set in the available clinical guidance.

Contact with Criminal Justice System

Limited data were made available from the Scottish Criminal Records Office (SCRO). Two-hundred and seventy four (86%) of those suffering a drug-related death in Scotland in 2003 were ever known to SCRO. Almost all (83%) of those known to SCRO were aged 20-40yrs. Detailed arrest data were not accessed during the investigation study period.

Contact with community- based specialist criminal justice schemes

Information on contact with community-based specialist criminal justice schemes showed very little contact for this population (Table 5.11). The available data may be an underestimate as some contacts may be unrecorded. It should also be noted that many of these initiatives were in their infancy in 2003 or were unavailable in some areas of the country.

Table 5.11: Contact with community based specialist criminal justice schemes

Type of service	YES Ever	YES <6months	NO	UNKNOWN
ARS	0	0	31 (10%)	274 (90%)
DFP	6 (2%)	0	17 (6%)	282 (92%)
CBATCS	23 (8%)	8 (2%)	12 (4%)	270 (88%)
DTTO	-	7 (2%)	41 (13%)	257 (85%)
Drug Court	-	5 (2%)	34 (11%)	266 (87%)
EPO	-	7 (2%)	38 (13%)	270 (85%)

ARS – Arrest Referral Scheme
DFP – Diversion from Prosecution Scheme
CBATCS – Community-based Alternative to Custody Scheme
DTTO- Drug Treatment and Testing Order
EPO – Enhanced Probation Order

Outstanding charges at time of death were recorded in 21 cases (8.9%).

Contact with Scottish Prison Service

Of the 317 cases, 149 (47%) had previously had a prison sentence. Of these, 70 (47%) died within 6 months of release, including thirty-six deaths (24%) which occurred within one month of release, 10 (28%) of which were within three days of release. No drug-related death occurred within any Scottish prison in 2003.

These figures represent a reduction in the number of drug-related deaths when compared to the previous year (n=383). In 2002 176 (46%) of all drug-related deaths had previously had a prison sentence. Fifty four deaths (31%) had occurred within one month of release of which 18 (33%) were within three days.

Deaths following Friday release

Table 5.12 sets out the number of deaths that occurred after release from prison. Six of the ten people who died within 3 days of leaving prison were released on a Friday. Two of these were from Barlinnie and one each from Edinburgh, Greenock, Inverness and Kilmarnock.

It may be that Friday releases are at increased risk of drug-related death. However, it should be noted that, of all prisoners released by the Scottish Prison Service in 2003 (n=22,915), 32% were released on a Friday as all releases due on Saturday, Sunday or Holiday Monday occur on the preceding Friday.

Table 5.12: Number of people who died following release from prison

Prison	Number of deaths			
	Ever been in prison	Within 6 months	Within 1 month	Within 3 days
Aberdeen	11	4	3	0
Barlinnie	49	24	11	2
Castle Huntly	1	0	0	0
Corntonvale	13	5	3	1
Dumfries	3	0	0	0
Edinburgh	16	5	1	1
Glenochil	1	0	0	0
Greenock	10	8	5	2
Inverness	5	2	1	1
Kilmarnock	7	5	3	1
Low Moss	20	12	5	1
Noranside	0	0	0	0
Perth	5	2	2	1
Peterhead	0	0	0	0
Polmont	7	2	2	0
Shotts	1	1	0	0
Total	**149**	**70**	**36**	**10**

Deaths within six months of release

Of those who died within six months of release (n=70) 50 were dependent/long term users, one was a recreational user and 19 could not be determined.

Thirty-four (49%) had been convicted and one imprisoned for non-payment of fines. 15 (21%) were on remand. Sentence information was unavailable in the CSC file for 20 (29%) of these cases as they had not self-disclosed an addiction issue while in prison or this information had not been reported in the records identified. Of the six females who had been imprisoned, one had been convicted and the other five held on remand.

Deaths within three days of release from prison

Table 5.13 details factors relating to those who died within three days of release.

Table 5.13: Deaths within three days of release from prison

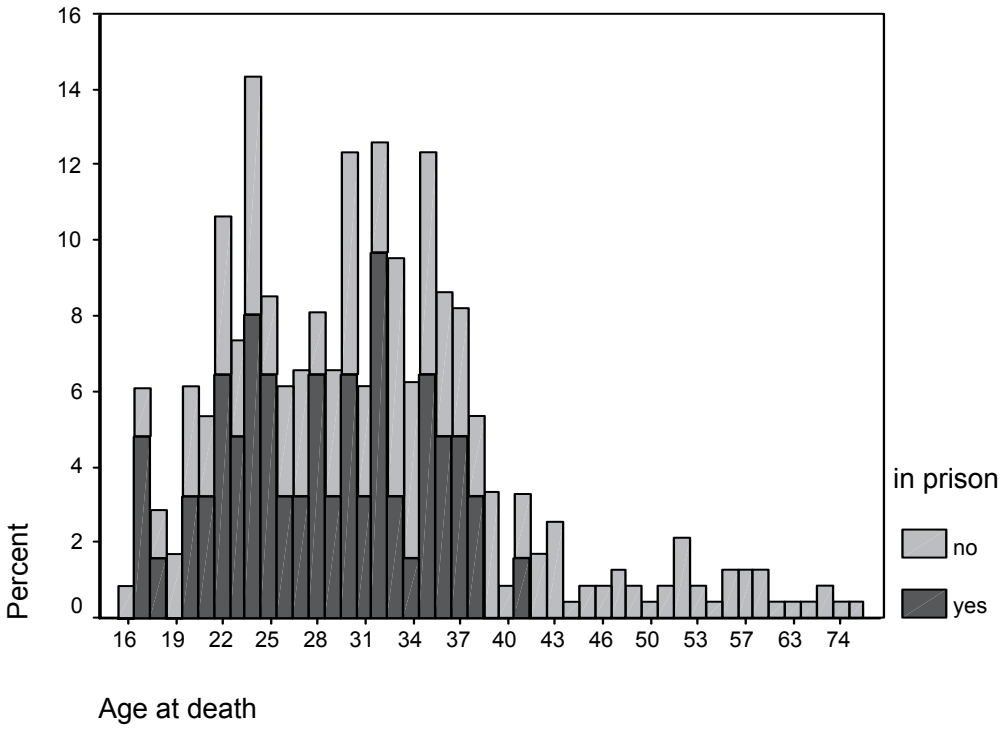
	Age (yrs)	Release prison	Home area	Time served (weeks)	Release – death (days)	Prison prescribed	Prescribed on release	Toxicology *
Case 1	41	Kilmarnock	Lanarkshire	60	3	Diazepam Dihydrocodeine	No	Heroin Diazepam
Case 2	23	Perth	Forth Valley	3	1	No	No	Heroin
Case 3	24	Edinburgh	Lothian	5	3	No	No	Heroin Alcohol
Case 4	26	Low Moss	Glasgow	10	1	No	No	Heroin Diazepam
Case 5	26	Barlinnie	Lanarkshire	2	3	No	No	Heroin Diazepam
Case 6	38	Inverness	Grampian	4	3	No	No	Heroin
Case 7	28	Cornton Vale	Glasgow	3	2	No	Yes	Methadone Diazepam
Case 8	30	Greenock	Argyll & Clyde	26	Same day	No	No	Heroin Alcohol
Case 9	31	Barlinnie	Glasgow	6	3	Diazepam	No	Methadone Diazepam
Case 10	37	Greenock	Argyll & Clyde	56	2	No	No	Heroin Diazepam

*Toxicology: Only positive results for Heroin, Diazepam, Methadone and Alcohol are displayed here. Other drugs may have been present but not displayed in this table.

Prison record by age group

The Bar chart (Figure 5.14) below illustrates the relationship between age and prison record. It can be seen that around half of those aged between 20 and 40 years had been in prison at some point in their lives compared to the over-40 age group where only one person had ever been in prison.

Figure 5.14: Relationship between age and prison record



Transitional care arrangements

In June 2000 the Scottish Prison Service launched a revised drug strategy which included plans aimed at effectively managing the transition between prison and the community. "Transitional Care" was introduced by SPS in 2001 to support prisoners who were serving less than four years or were on remand and who had an identified substance misuse problem. Prisoners serving more than four years do not have access to "Transitional Care" as they are catered for by the SPS Sentence Management System and statutory post-release arrangements. Some establishments offer Transitional Care to all drug misusers who are brought to their attention. In others, demand has led to waiting lists. Self-referral is also available in every Scottish prison, even for those not accessing casework services.

Scottish Prison Service records show that Transitional Care was offered to 34 (49%) of the 70 inmates who died of a drug-related death in 2003. Access to Transitional care was unavailable for 14 people (20%). Eight were on a waiting list (HMP Barlinnie only) and one was in HMP Shotts where the scheme is unavailable. Five people in HMP Kilmarnock could only access Transitional Care by self referral. None did. Ten were not known to Cranstoun (4 in Barlinnie, 4 in Low Moss, 1 in Edinburgh, 1 in Inverness). Notes were not available in 3 cases (2 in Barlinnie, 1 in Cornton Vale).

Of the 34 offered Transitional Care in Scottish Prisons, 23 (68%) accepted while 11 did not. Distribution by establishment is shown in the table below (Table 5.15). In the case of those who were not offered formal Transitional Care, or were ineligible for it, it cannot be determined from existing data what attempts were made to ensure the continuity of care and treatment between community and prison, nor can it be determined whether the time in prison was used constructively to initiate treatment by referral to outside agencies.

Table 5.15: Offer of Transitional care (n=70)

	Care Offered		Accepted	
	Yes	No	Yes	No
Aberdeen (4 deaths)	1 (25%)	3	0	1
Barlinnie (24 deaths)	8 (33%)	2	7 (87%)	1
Cornton Vale (5 deaths)	3 (60%)	1	1 (33%)	2
Edinburgh (5 deaths)	3 (60%)	1	1 (33%)	2
Greenock (8 deaths)	6 (75%)	2	4 (67%)	2
Inverness (1 death)	1 (100%)	0	0	1
Kilmarnock (5 deaths)	0	5	-	-
Low Moss (12 deaths)	8 (67%)	0	7 (87%)	0
Perth (2 deaths)	2 (100%)	0	2 (100%)	0
Polmont (2 deaths)	2 (100%)	0	1 (50%)	1
Shotts (1 death)	Transitional Care not available			
Scotland (70 deaths)	34 (49%) offered		23 (68%) accepted	

Interpretation

Transitional Care should give an opportunity to offer support and enhanced access to treatments known to impact on drug deaths, to this vulnerable group. Fifty of the 70 deaths which occurred within 6 months of release, were known to be long term dependent users yet only 34 were offered access to Transitional Care. This may reflect the organisation of the Transitional Care services, including their inclusion and exclusion criteria. In some establishments there

were clearly practical barriers to access – with one having no access to Transitional Care at all, one accepting only self-referrals (of which none of the DRD group availed themselves) and one having waiting lists. Some of the 70 may have received interim liberation or may have been released from court, in which circumstances they would not be in a position to be offered or to accept Transitional Care. There are varying degrees of success from establishment to establishment, regarding conversion of the offer to an accepted intervention. Some prisons converted 100% of offers while in others as little as one in three accepted the offer. Improving identification of this group, increasing the number offered such support and increasing the numbers accepting the offer gives potential for impacting on drug-related deaths after release from prison.

Case study
A 30-year-old male who died on the day of liberation from prison. Post mortem states he died of heroin intoxication. He had a history of moderate mental health problems dating back some 10 years – diagnosed as suffering from depression and anxiety which had been treated by his GP with antidepressants. He was also known to be opiate dependent having been an IV user for three years. The prison mental health team had assessed him regarding suicide risk and organised a GP appointment on his liberation day but he failed to attend. He was socially isolated, having lost contact with his family and was homeless, having given up his tenancy on entering prison in July 2003. He was liberated to a friend's home, claiming to be drug free. He was found dead in the bathroom having injected heroin.

Conclusions

This chapter highlights the fact that the majority of those dying of drug-related causes in Scotland in 2003 were known to at least one service with some known to many. They were mainly accessing generic service providers and the services they accessed tended to reflect local service distribution. In all areas this contact was mainly with their General Practitioner or Primary Care team. Other generic services were regularly accessed in emergency situations including Accident & Emergency and Acute Psychiatry services. Repeated contacts were common but there was little evidence of a coordinated response or follow up. There are clearly opportunities to intervene in this group which have not been fully exploited – including education of generic services and improved coordination of response to those repeatedly presenting to services. This work should involve Psychiatry and Accident & Emergency services.

Those in contact with specialist services were mainly accessing medical treatment (such as methadone replacement prescribing) or Social Work interventions. Only 17% of those known to services were in receipt of replacement prescribing services at the time of death. Most methadone prescribing was through General Practice. Records of assessment and decisions regarding prescription alteration – dose increase or reduction; dispensing arrangements etc. - are poor. Most were prescribed low doses of methadone and few also received supportive counselling. There is a need to improve the demonstrable quality of prescribing treatments and to improve access to supportive counselling interventions which may impact on risk for this group.

Key Points

- There is a need to improve the quality of note keeping, in both community-based services and those within the Scottish Prison Service, to allow closer scrutiny of the care received.

- Most people suffering drug-related deaths were known to services and many were accessing more than one.

- These services are often generic (i.e. not specialists in the field of substance misuse) and were often accessed in an ad hoc, chaotic manner. Most were discharged with inadequate follow up in place or failed to attend any such follow up appointments resulting in discharge and no further action.

- There is a need to increase awareness of this problem and to deliver training and improved coordination for those generic staff most likely to come into contact with this group – General Practitioners, Psychiatric services, Accident & Emergency and Social Work.

- Specific medical interventions for drug misuse were only accessed by a minority of these people. When accessed they were often prescribed methadone.

- Methadone replacement prescribing should be delivered alongside supportive psychosocial interventions, including counselling – which was only accessed by a small minority of the prescribed group.

- Methadone should be prescribed in line with the current evidence base – following a full assessment of drug problems and dependency; in adequate doses to meet need; dispensed safely and effectively under supervision until the person is demonstrably stable.

- Many had been in prison in the last 6 months. Ten died within 3 days of release of which 6 were released on a Friday. There is a need to ensure that effective communication takes place to ensure imprisonment does not interrupt treatment (if being accessed before incarceration) or that it gives an opportunity to increase access to treatment if not already in contact with services. DAATS should review the care pathways across the community/prison interface and ensure adequate accessibility to services for all newly released prisoners.

- Transitional Care is not being made available to all who require it. Prisons show varying success regarding take-up rates.

- There is a need to ensure all opportunities are taken to intervene when drug misusers are in prison. Prisons should look proactively at how they engage with prisoners at the start of their treatment cycle.

Chapter 6: Experiences of overdose survivors

What is in this chapter? This section of the report describes the findings from extended interviews with a sample of overdose survivors.

Where did the information come from? Injectors were interviewed as part of an ongoing study of IDUs' risk behaviours. Those who had survived an overdose in the six months prior to interview were invited to take part in an extended interview of structured open-ended questions to obtain relevant information surrounding their experiences that may inform prevention strategies.

Sample characteristics

Of the 595 living injectors recruited into the ongoing study evaluating the change in the Lord Advocate's guidelines on the supply of needle and syringes to injecting drug users, ninety-seven (16.3%) had overdosed at least once in the previous 6 months and, of these, 40 (41.2%) completed an extended interview.

At least one attempt was made to contact most overdose survivors. However, some IDUs had either changed their address and contact details in between the first and follow-up interviews, were not available when interviewers called at their address or had changed their minds about being interviewed.

Table 6.1 shows the characteristics of the 40 IDUs who were followed up. The majority (32, 80%) were male, mean age was 33.5 years and mean length of injecting was 11.8 years. Respondents had experienced a mean of 1.6 overdoses in the previous six months and five (13%) survivors had overdosed intentionally at their last overdose.

Table 6.1: Characteristics of 40 overdose survivors who completed an extended interview

Mean age (years)	33.5
Males (n)	32
Mean time since onset of injection (years)	11.8
Ever been in treatment (n)	34
In treatment at last overdose (n)	14
Last overdose intentional (n)	5
Mean number of overdoses in last six months	1.6

Knowledge of risk factors/overdose prevention

Several factors were mentioned as overdose risks by IDUs. "Mixing drugs", particularly heroin and benzodiazepines was the most frequently cited (n=18). Alcohol in conjunction with either or both heroin and benzodiazepines was also mentioned by 6 IDUs.

After mixing drugs, loss of tolerance was the next most recognised risk, cited by 17 respondents. In a few cases (n=8) this factor was mentioned in association with release from prison.

On the same theme as tolerance, 11 IDUs mentioned that "having too much heroin" was risky and five blamed the purity of heroin for overdoses.

Other risks identified included being on one's own when injecting (n=7), "greed" (n=3) and "chasing"/wanting to experience an overdose" (n=2).

Risk taking behaviour

All respondents were asked about the drugs they had taken on the day of their last overdose. Number of drugs taken ranged from one to four. One drug had been involved in 6 cases, two drugs in 14 overdoses, three drugs in 6 cases and four drugs were reported in 3 overdoses. Eleven overdoses had involved alcohol; on five occasions this had been taken in conjunction with two drugs, on three occasions with three drugs and another three overdoses had involved alcohol and one drug (table 6.2).

Table 6.2: Number of drugs taken at last overdose

Number of drugs taken	Number of respondents
1	6
2	14
3	6
4	3
1 + alcohol	3
2 + alcohol	5
3+ alcohol	3

Heroin had been taken in all but one of the reported overdoses. In all 31 overdoses involving two or more substances, heroin and diazepam were involved together in 21 cases. In the 14 overdoses involving two drugs, the most common combination was heroin and diazepam (n=9). In all 39 overdoses involving heroin, it was administered intravenously. Diazepam had been taken in 22 overdoses, in all but one of these episodes it was taken orally and on one occasion it was injected. In the only overdose in which heroin was not consumed the cocktail of drugs included methadone, cocaine, benzodiazepine (type of benzodiazepine was not stated by respondent) and alcohol.

Methadone was implicated in 7 overdoses, always in combination with other substances. Cocaine was involved in 9 overdoses, in combination with other substances, and injected on all occasions.

Dosages ranged widely. Four overdose survivors claimed to have overdosed on one £10.00 bag of heroin. At the other end of the spectrum, one respondent reported drinking two bottles of vodka, half a bottle of bourbon, swallowing 100mg of diazepam and injecting £20.00 of heroin in the course of one day. Another reported consuming 300mg of diazepam, £20.00 of cocaine, £20.00 of heroin (the latter two injected) and one bottle of whisky.

Seven of the forty IDUs reported that they had recently (within the previous two weeks) been released from prison. Amounts of substances consumed on the day of overdose amongst this group tended to be lower compared with other respondents. Two of those recently released had each overdosed on one £10.00 bag of heroin; another had overdosed on £10.00 of heroin and 50mg of diazepam and one had overdosed on one quarter of a £10.00 bag of heroin and 170mg of diazepam. Reported substance consumption of the remaining three who were

recently liberated was 80mgs of diazepam, one bottle of fortified wine and an unspecified amount of other alcohol; one £10.00 bag of heroin, 10mg of diazepam and four cans of super lager; a half gram of cocaine and one £20.00 bag of heroin, respectively.

Reasons for surviving overdose

When asked why they thought they had survived their most recent overdose, by far the most common response (n=25) was that someone else had been present at the time. A further four IDUs had had someone present when they overdosed but ascribed their survival to "luck". Nine respondents had been on their own and attributed their survival to "luck", "God" or having been found in time. Amongst the five who had overdosed intentionally, four had been on their own and, of these, three had been found by someone.

Why treatment did not help prevent overdose

Fourteen overdose survivors had been in treatment at the time of their last overdose. All but one was receiving prescribed methadone. Respondents were asked why they thought treatment had not prevented them from overdosing. Four could not give a reason; five IDUs attributed their overdose to topping up on other substances whilst prescribed methadone; two of these claimed that their methadone was "not enough"; a further two respondents believed it to be due to the purity of heroin they had taken (although these two IDUs were also receiving methadone). One respondent said that it was "a bad mood" which led to the overdose and another IDU claimed that treatment staff " did not give enough time to talk". Two of the 14 in treatment had overdosed intentionally.

Why not in treatment

The 26 IDUs who had not been in treatment at the time of overdose gave a wide variety of reasons for this. These included "just out of prison" (n=6) or out of rehabilitation (n=1), not wanting methadone (described by one IDU as "the devil") because of severe withdrawal effects (n=3); laziness or apathy, "just couldn't be bothered", "hadn't got round to it" (n=3); not being able to access treatment (n=3); wanting to control/cut down consumption by themselves (n=2), not wanting to stop drug use (n=2), treatment being a waste of time (n=1); to get access to children (n=1); not needing treatment (n=1); not encouraged by anyone to seek treatment (n=1). Two respondents gave no response to this question.

Overdose Prevention

The most frequently quoted prevention strategy was to inject when someone else was present (n=13) (table 6.3). Nine IDUs suggested that safe injecting facilities would help prevent overdoses. Respondents also suggested ways in which awareness of overdose could be raised among IDUs. These included the provision of videos (n=8) or leaflets (n=7), although two respondents pointed out that leaflets were not suitable for IDUs with reading difficulties. It was also suggested that life-saving or resuscitation methods should be taught to IDUs (n=3). Four respondents thought that heroin should be legalised and two suggested that there should be a facility to test the purity of heroin.

Table 6.3: Overdose prevention strategies most frequently suggested by 40 overdose survivors who completed an extended interview

Strategy	Number of respondents*
Inject with someone present	13
Safe injecting facilities	9
Information videos	8
Information leaflets	7
Legalise heroin	4
Resuscitation or life-saving classes	3
Facilities to test purity of heroin	2

*Respondents could give more than one answer

Overdose Interventions

When asked what should be done when someone has overdosed, half (n=20) of the sample mentioned the recovery position. Nine referred to giving the "kiss of life" and four to giving CPR. Calling an ambulance was cited by nine respondents.

Inflicting physical pain, however, was the most commonly reported intervention method. Twenty-eight respondents stated that slapping or punching was the way to bring someone out of an overdose. Some serious physical assaults were reported, including one respondent who showed the interviewers two burn marks that had been inflicted on him by a friend on one overdose occasion. Twenty-one IDUs mentioned water as a revival mechanism. This ranged from applying a damp cloth to the person's face to throwing a bucket of water over them or putting ice down the person's back. Other revival methods included walking the victim around (mentioned by 17 IDUs) or talking to the victim (n=9). The most frequently mentioned interventions are set out in Table 6.4 below.

Table 6.4: Overdose interventions most frequently mentioned among 40 overdose survivors who completed an extended interview

Intervention	Number of respondents*
Slapping/punching	28
Applying water	21
Put in recovery position	20
Walk victim around	17
Talk to victim	9
Give "kiss of life"	9
Call an ambulance	9
CPR	4

*Respondents could give more than one answer

Nineteen IDUs had received training in resuscitation techniques, mainly in prison or treatment agencies. Yet, despite their training, even some of these respondents reported inflicting pain. One respondent explained why:

> "In the jail I have been taught……[that] all that walking about and slapping, putting water on is doing the wrong thing. Put them in the recovery position, phone an ambulance. But it is hard to [do this] when one of your own is lying there going pure blue…..and even if I know the right thing to do is to put them in the recovery position, and I've done it a few times in jails but that is all dummies and there is no panic, but see at the real thing you panic, you don't know what to

do….. All you can think of is, if you go away and leave him and then come back and he is dead, my family would never forgive me".

Respondents also spoke of barriers to intervening in an overdose situation. Fear of the police, particularly fear that they would be arrested and blamed if the victim died, was the greatest barrier. This concern often resulted in IDUs either not reporting the overdose or not staying to help the overdose victim. One hostel dweller claimed "a lot of people die because others don't want to go downstairs [in the hostel] and say "he's overdosed"".

Personal perceptions of overdose risk

Thirteen IDUs thought that they would not have another overdose. This belief was mainly based on the changes they had made following their last overdose. Respondents reported that they had either cut down or stopped consumption of all or some drugs. Nine IDUs thought that they would have another overdose; one respondent replied that overdose "goes with the territory". Six respondents believed that they probably would overdose and the remaining sample did not know if another overdose was likely.

Half of the sample (n=20) reported that they were worried about having another overdose and 17 IDUs stated that they did not worry about this. However, when probed a bit further, some of the 17 explained that they were not worried because they did not care if they lived or died. "Yes and no [I'm worried] because I don't want to die but at the same time I don't see much point in living at times".

Overdose myths

In the course of the interviews it became apparent that some IDUs held erroneous beliefs about overdose. Five IDUs believed that smoking heroin would not lead to overdose; one respondent claimed that overdose would not occur if heroin was injected by itself and not in combination with other substances; one thought that it was not possible to overdose on methadone; another stated that, in a drug cocktail of heroin and diazepam, if the diazepam was consumed first there would be a danger of overdose, if heroin was taken first there would be no danger of overdose.

Other myths surrounded appropriate overdose interventions. One IDU stated that "you won't overdose if somebody is with you, if they are slapping you". On the same theme, another respondent claimed that "If you keep saying their name and you really care about that person, then they'll come round".

Key points

- Injecting drug users are aware, to some extent, of the overdose risks, although this knowledge is not extensive. Less than half mentioned loss of tolerance as a factor and less than half considered that a mixture of drugs could be risky.

- The majority of overdoses occurred amongst those who had taken more than one substance on the day of overdose.

- Heroin had been taken in all but one overdose. Heroin and diazepam taken together or on the same day was the most common combination, taken in 22 cases. In fifteen overdoses heroin and diazepam were the only drugs consumed; in the remaining five episodes they were taken in combination with one or two other substances and/or alcohol.

- Injecting with someone else present was the most frequently cited prevention strategy.

- Inflicting physical pain was the most common intervention used by injecting drug users. Although putting the overdose victim into the recovery position was cited by half the sample, the infliction of pain was still regarded as the most effective strategy.

- There were some misconceptions about overdose risk factors. Some injecting drug users believed that overdose would not occur if heroin was smoked or if it was injected by itself.

- Half of the sample was worried about having another overdose. Among those who were not worried, some claimed not to care whether they lived or died.

Chapter 7: Conclusions and Implications

What is in this chapter? This chapter reviews the findings from individual chapters and draws together a final set of conclusions along with associated implications for service commissioners and providers.

Where did the information come from? The information has been drawn from the "key points" sections from each chapter in the body of the report.

Introduction

This investigation has comprehensively examined the circumstances of death, social circumstances and service contacts of those dying of drug-related causes in Scotland in 2003. It has also considered long-term trends in drug-related deaths in Scotland and has compared the circumstances of the 2003 Scottish deaths with data from a concurrent study into drug-related deaths in London for the same year. Finally the investigation has explored the opinions, beliefs and knowledge of living injectors regarding overdose risk.

The developing evidence-base implies that many drug-related deaths may be preventable and this investigation aimed to identify areas which, if effectively addressed would impact on the rate of drug-related deaths in Scotland.

Each chapter of the report has therefore identified "Key Points" based on the data collected. These are summarised below and have been used to generate implications for service commissioners and providers arising from the findings of this investigation.

Describing the study population and trends over time

Most Scottish drug related deaths in 2003 were male, and in their early 30s (mean age of 32.7 years). Most were considered to have been accidental drug overdoses (based on ICD-10 criteria for drug related deaths), although a sizeable 13% were classified as suicides. These characteristics are consistent with previous published studies into drug related deaths.

Trends in drug-related deaths in Scotland from 1996 to 2003 were complex and showed a great deal of heterogeneity over time in relation to geographical distribution and the involvement of heroin/morphine or methadone. Drug-related deaths involving heroin/morphine had increased at a significantly higher rate than those involving methadone in Scotland during 1996-2003 (13.8% vs –0.4% per year, respectively). In Glasgow, however, deaths involving methadone increased at a higher rate (average 9.7% per year) than deaths involving heroin (which increased at an average 6.5% per year).

Drug-related deaths involving heroin/morphine had increased at a significantly higher rate out-with the main urban centres of Glasgow and Lothian during 1996-2003, and likely relates to the growth of drug use in these areas. Overall, there were twice as many deaths involving heroin/morphine as methadone. However, the ratio of heroin/morphine : methadone overdose deaths varied considerably between geographical areas – for example, from 117 : 26 in Lanarkshire to 21 : 70 in Tayside and 59 : 175 in Lothian.

A higher proportion of methadone compared to heroin/morphine–related deaths in Scotland occurred at the weekend (defined as Friday to Sunday). Drug-related

deaths increased at a significantly higher rate among those aged 35-54 compared to 15-24 years during 1996-2003.

Implications

The study and analysis showed important differences in drug-related deaths over time and geographically. However other studies will be required to test potential explanations and hypotheses for these differences. One key question is to what extent do the differences follow, and are due to, the underlying trends and pattern in drug use in Scotland? Or are there differences in the availability and delivery of treatment, and investigation of drug-related deaths, that may have a bearing on the mortality statistics and mortality rate within Scotland.

Toxicological findings and circumstances of death

1. There were missed opportunities to intervene and save the lives of many of the people who died. Less than half had tried CPR and most cases had died by the time the ambulance arrived.

Implications

There is a need to develop and deliver training and education for drug users and their families to increase awareness of the risks of overdose, how to avoid it, how to identify it and how to respond effectively.

2i). Benzodiazepines were the most common drugs detected in drug-related deaths. Few cases were positive for psychostimulants, in particular cocaine. The predominant drugs found at the time of death continue to be heroin/morphine, benzodiazepines and alcohol in Scotland.

2ii). Nearly half of methadone related deaths, and two-thirds of diazepam and dihydrocodeine positive deaths involving illicitly obtained medications.

Implications

The widespread ingestion of benzodiazepines in particular diazepam among drug users (as indicated by the toxicology data for the current sample of deaths, and by the data on trends in drug-using characteristics of cases of drug related death during 1996-2003 in Scotland) is a matter of major concern regardless of whether these drugs were implicated in the cause of these deaths. Benzodiazepines are potential drugs of dependence with risks of both acute and chronic adverse psychological, physical and social sequelae for misusers. More research is needed into the prevention and management of benzodiazepine abuse.

The findings also suggest that illicit manufacture and/or diversion of prescribed drugs is a substantial source of drugs for users, and remains a significant issue for health service providers and others in the field. Where diversion of prescribed drugs e.g. dihydrocodeine or methadone and/or benzodiazepines, may be occurring, there is a need to address prescribing practices in relation to these drugs. However any further analysis of illicit sources of medications would have involved collection of data on the illicit manufacture of prescription medications, which did not form part of this investigation.

3. A relatively high proportion of cases did not inject any drugs prior to overdose and death. A high proportion was also positive on toxicological analysis for only orally consumed drugs. Drug users who do not inject heroin (or other drugs) are also at risk of fatal drug overdose.

Implications

The findings reported here suggest that overdose prevention initiatives should continue to reinforce the message that most fatal drug 'overdoses' are polydrug deaths and alert drug users that for a substantial number of cases, 'lethal' drugs are not necessarily injected drugs.

Services must be aware of the risks of non-injecting, in particular oral drug use, and must continue to warn drug users and the broader community of the dangers of combinations of drug use including alcohol. Drug treatment services may also need to be aware that non-injecting dependent drug (in particular licit drug) and alcohol users, may not be attracted into seeking help because they may not identify with these agencies' illicit drug using and/or injecting clientele.

4. Analysis of cause of death information showed that the same drug-related cause of death may be recorded on the death certificate by forensic authorities in various ways. It also found that while 'opiate intoxication' was the most frequently recorded cause of death for drug related deaths in Scotland, being recorded for 131 (44%) cases, in only 12 (9%) cases was toxicology positive only for opiates. In the vast majority of opiate intoxication cases, toxicology identified other drugs in addition to opiates, most frequently benzodiazepines and alcohol.

Implications

That post-mortem toxicological results are not always reflected in the certified cause of death could suggest either under-reporting on the death certificate of other drugs detected or more likely that other drugs detected were not considered to be implicated in the cause of death.

The task of attributing cause of death to one or more of a number of drugs detected at post-mortem is a complex and inherently fraught one in the case of many drug-related deaths. However, under current cause of death nomenclature, the prevalence of polydrug use, and in particular the widespread involvement of 'licit' orally consumed drugs in cases of drug related death, may be underestimated.

The systematic collation and availability of forensic toxicological data would assist the surveillance and/or analysis of trends in drug-related fatalities. Developing a more standardised, uniform nomenclature for recording drug-related deaths on medical certificates would also improve the monitoring and researching of drug-related deaths.

5. There were a higher number of deaths positive for dihydrocodeine and benzodiazepines in Scotland, and a higher number of deaths positive for cocaine in London. There were a higher number of cases in receipt of dihydrocodeine prescriptions in Scotland, and lower average blood concentrations of methadone and morphine in Scotland.

Implications

These key differences, which might reflect differences in the pattern of drug use and treatment provision between Scotland and London, could be explored further.

6. In Scotland, a higher proportion of deaths (17% vs. 10%) were associated with recent prison release (i.e. within three months of release) compared with London.

Implications

Part of the difference may possibly be explained by differences in services provision between the two sites. The larger proportion of deaths with a recent prison history in Scotland, which is a recognised risk factor for drug related mortality, is worthy of further investigation.

Social circumstances prior to death

1. Information, as it is currently collected across Scotland is sparse, inconsistent and difficult to cross-reference.

Implications

Use of a standardised, well-validated method of collecting agreed data on all drug deaths would substantially facilitate the identification of relevant social risk factors.

2. The lack of up to date relevant information in many of the casefiles, which would be required to organise an integrated care plan is a concern. The availability of rich, up to date information would allow identification and prioritisation of potential risk factors in this vulnerable population which could reduce future morbidity and mortality and must form part of good practice in the management of drug misusers.

Implications

Staff in all settings should be trained to comprehensively and holistically assess drug misusers and to ensure that regular updates of essential information (e.g. regarding childcare responsibilities, life events etc.) are recorded. Nationally, standards could be set within the DAT Corporate Action Plan requiring recording of adequate information. Locally, DATs and their health and Local Authority partners could ensure that services are commissioned with clear quality standards and monitoring procedures in place.

Contact with services

1. Most people who died of drug-related causes were known to services and many were accessing more than one. These services were often generic (i.e. not specialists in the field of substance misuse) and were often accessed in an ad hoc, chaotic manner. Following this contact, most were discharged with inadequate follow up in place or failed to attend any such follow up appointments resulting in discharge and no further action.

Implications

There is a need to increase awareness of this problem and to deliver training and improved coordination of activity for those generic staff most likely to come into contact with this group – General Practitioners, Psychiatric services, Accident & Emergency and Social Work.

2. Medical interventions were only accessed by a minority. When accessed, the intervention was often prescribed methadone. Quality of methadone prescribing was often outside that contained in national practice guidelines. Few of those prescribed methadone were in receipt of any counselling.

Implications

Methadone replacement should be prescribed only in line with the current evidence base – following a full assessment of drug problems and dependency; in adequate doses to meet need; dispensed safely and effectively under supervision until the person is demonstrably stable. Methadone replacement prescribing should be delivered alongside supportive counselling.

3. Many had been in prison in the last 6 months. Ten died within 3 days of release of which 6 were released on a Friday. Transitional Care is not being made available to all who require it. Prisons show varying success regarding take-up rates.

Implications

There is a need to ensure all opportunities are taken to intervene when drug misusers are in prison. In particular, there is a need to ensure that effective communication takes place to ensure imprisonment does not interrupt treatment (if in treatment before incarceration) or that it gives an opportunity to increase access to treatment if not already in contact with services. DAATS should review the care pathways across the community/prison interface and ensure adequate accessibility to services for all newly released prisoners. Prisons should look proactively at how they engage with prisoners at the start of their treatment cycle.

Experiences of overdose survivors

The majority of overdoses occurred amongst those who had taken more than one substance on the day of overdose. Heroin had been taken in all but one overdose. Heroin and diazepam taken together or on the same day was the most common combination, taken in 22 cases. In fifteen overdoses heroin and diazepam were the only drugs consumed; in the remaining five episodes they were taken in combination with one or two other substances and/or alcohol.

Injecting drug users are aware, to some extent, of the overdose risks, although this knowledge is not extensive. Less than half mentioned tolerance as a factor and less than half considered that a mixture of drugs could be risky. There were some misconceptions about overdose risk factors. Some injecting drug users believed that overdose would not occur if heroin was smoked or if it was injected by itself. Injecting with someone else present was the most frequently cited prevention strategy.

Inflicting physical pain was the most common intervention used by injecting drug users. Although putting the overdose victim into the recovery position was cited by half the sample, the infliction of pain was still regarded as the most effective strategy. Half of the sample was worried about having another overdose. Among those who were not worried, some claimed not to care whether they lived or died.

Implications

There is a need to develop and deliver training and education for drug users and their families to increase awareness of the risks of overdose, how to avoid it, how to identify it and how to respond.

Conclusion

This investigation has identified a number of implications for services in the prevention of future drug-related deaths in Scotland. It has highlighted some limitations of fiscal and national registry office data on drug-related mortality and has raised aspects of drug-related deaths requiring further research.

Finally, the report provides some baseline indicators by which the potential effectiveness of interventions to prevent or reduce drug related deaths in future might be measured. Some of these outcome measures might include improved after care from prison, improved delivery of methadone treatment, and increased engagement of drug users with services especially drug treatment services.

Appendix 1

Notes on the definition of 'drug-related' deaths

1. The definition of a 'drug-related death' is not straightforward. A useful discussion on the definitional problems may be found in an article in the Office for National Statistics publication Population Trends. More recently, a report by the Advisory Council on the Misuse of Drugs (ACMD) considered current systems used in the United Kingdom to collect and analyse data on drug related deaths. In its report, the ACMD recommended that 'a short life technical working group should be brought together to reach agreement on a consistent coding framework to be used in future across England, Wales, Scotland and Northern Ireland'. GROS was represented on this group and this paper presents information on drug-related deaths using the approach agreed.

2. The baseline covers the following cause of death categories (the relevant codes from the International Classification of Diseases, Tenth Revision (ICD10), are given in brackets):

a. deaths where the underlying cause of death has been coded to the following sub-categories of 'mental and behavioural disorders due to psychoactive substance use':

   i. opioids (F11);

   ii. cannabinoids (F12);

   iii. sedatives or hypnotics (F13);

   iv. cocaine (F14);

   v. other stimulants, including caffeine (F15);

   vi. hallucinogens (F16); and

   vii. multiple drug use and use of other psychoactive substances (F19).

b. deaths coded to the following categories and where a drug listed under the Misuse of Drugs Act (1971) was known to be present in the body at the time of death:

   i. accidental poisoning (X40 - X44);

   ii. intentional self-poisoning by drugs, medicaments and biological substances (X60 - X64);

   iii. assault by drugs, medicaments and biological substances (X85); and

   iv. event of undetermined intent, poisoning (Y10 - Y14).

3. Categories of death excluded:

a. deaths coded to mental and behavioural disorders due to the use of alcohol (F10), tobacco (F17) and volatile substances (F18);

b. deaths coded to drug abuse which were caused by secondary infections and related complications (for example the 20 or so deaths in 2000 caused by clostridium novyi infection);

c. deaths from AIDS where the risk factor was believed to be the sharing of needles;

d. deaths from road traffic and other accidents which occurred under the influence of drugs; and

e. deaths where a drug listed under the Misuse of Drugs Act was present because it was part of a compound analgesic or cold remedy: specific examples are:

   Co-proxamol: paracetamol, dextropropoxyphene
   Co-dydramol: paracetamol, dihydrocodeine
   Co-codamol: paracetamol, codeine sulphate

f. All three of these compound analgesics, but particularly co-proxamol, are commonly used in suicidal overdoses.

g. Note: As it is believed that dextropropoxyphene is rarely if ever available other than as a constituent of a paracetamol compound, it has been ignored on all occasions (even if there is no mention of a compound analgesic or paracetamol). However, deaths involving codeine or dihydrocodeine without mention of paracetamol have been included in the baseline as these drugs are routinely available on their own and known to be abused in this form.

Source: General Register Office for Scotland (2004) *Drug related deaths in Scotland in 2003.*

Appendix 2

Table A2.1: Characteristics of and trends in drug-related deaths during 1996-2003 among persons aged 15-54 years in Scotland

Characteristics of death		Calendar year of death								**Total**	**Annual change* % (95% CI)**
		1996	1997	1998	1999	2000	2001	2002	2003		
All		234 (100%)	210 (100%)	236 (100%)	284 (100%)	284 (100%)	319 (100%)	372 (100%)	301 (100%)	2240 (100%)	6.7 (4.8, 8.7)
Cause of death:											
	Drug abuse/accidental poisoning	183 (78%)	153 (73%)	191 (81%)	239 (84%)	230 (81%)	244 (76%)	294 (79%)	228 (76%)	1762 (79%)	6.6 (4.4, 8.8)
	Intentional self-poisoning	35 (15%)	32 (15%)	24 (10%)	13 (5%)	30 (11%)	26 (8%)	25 (7%)	31 (10%)	216 (9%)	-1.7 (-7.3, 4.1)
	Undetermined	16 (7%)	25 (12%)	21 (9%)	32 (11%)	24 (8%)	49 (15%)	53 (14%)	42 (14%)	262 (12%)	16.0 (9.8, 22.5)
Day of week	Mon-Thurs	121 (52%)	101 (48%)	123 (52%)	137 (48%)	153 (54%)	165 (52%)	206 (55%)	154 (51%)	1160 (52%)	7.7 (5.0, 10.5)
	Fri-Sun	113 (48%)	109 (52%)	113 (48%)	147 (52%)	131 (46%)	154 (48%)	166 (45%)	147 (49%)	1080 (48%)	5.7 (3.0, 8.5)
Gender	Male	180 (77%)	170 (81%)	188 (80%)	232 (82%)	234 (82%)	261 (82%)	315 (85%)	245 (81%)	1825 (81%)	7.6 (5.5, 9.8)
	Female	54 (23%)	40 (19%)	48 (20%)	52 (18%)	50 (18%)	58 (18%)	57 (15%)	56 (19%)	415 (19%)	3.0 (-1.3, 7.4)
Age (years)	15-24	86 (37%)	76 (36%)	87 (37%)	94 (33%)	73 (26%)	79 (25%)	100 (27%)	78 (26%)	673 (30%)	0.3 (-3.0, 3.6)
	25-34	103 (44%)	89 (42%)	103 (44%)	118 (42%)	126 (44%)	140 (44%)	153 (41%)	123 (41%)	955 (43%)	6.0 (3.1, 9.0)
	35-54	45 (19%)	45 (21%)	46 (20%)	72 (25%)	85 (30%)	100 (31%)	119 (32%)	100 (33%)	612 (27%)	16.0 (11.9, 20.2)

* Derived from Poisson regression.

Table A2.1: Characteristics of and trends in drug-related deaths during 1996-2003 among persons aged 15-54 years in Scotland (Continued)

Characteristics of death		Calendar year of death								**Total**	**Annual change* % (95% CI)**
		1996	1997	1998	1999	2000	2001	2002	2003		
Health-board	Glasgow	89 (38%)	63 (30%)	90 (38%)	99 (35%)	103 (36%)	93 (29%)	124 (33%)	104 (35%)	765 (34%)	5.4 (2.2, 8.8)
	Lothian	55 (24%)	44 (21%)	34 (14%)	37 (13%)	36 (13%)	53 (17%)	38 (10%)	35 (12%)	332 (15%)	-3.2 (-7.7, 1.4)
	Grampian	28 (12%)	21 (10%)	25 (11%)	38 (13%)	31 (11%)	45 (14%)	45 (12%)	36 (12%)	269 (12%)	8.5 (2.9, 14.4)
	Argyll & Clyde	17 (7%)	15 (7%)	23 (10%)	29 (10%)	29 (10%)	20 (6%)	31 (8%)	26 (9%)	190 (9%)	7.0 (0.5, 13.9)
	Lanarkshire	11 (5%)	11 (5%)	21 (9%)	22 (8%)	28 (10%)	24 (8%)	36 (10%)	25 (8%)	178 (8%)	13.8 (6.6, 21.6)
	Tayside	22 (9%)	28 (13%)	19 (8%)	14 (5%)	13 (5%)	17 (5%)	14 (4%)	18 (6%)	145 (7%)	-6.7 (-13.1, 0.2)
	Ayrshire & Arran	3 (1%)	6 (3%)	4 (2%)	15 (5%)	19 (7%)	34 (11%)	31 (8%)	17 (6%)	129 (6%)	28.3 (18.1, 39.4)
	Elsewhere	9 (4%)	22 (10%)	20 (8%)	30 (11%)	25 (9%)	33 (10%)	53 (14%)	40 (13%)	232 (10%)	18.8 (12.0, 26.0)
Drugs detected:	Heroin	82 (35%)	73 (35%)	116 (49%)	163 (57%)	186 (66%)	201 (63%)	224 (60%)	164 (55%)	1209 (54%)	13.8 (10.9, 16.7)
	Methadone	99 (42%)	86 (41%)	64 (27%)	63 (22%)	55 (19%)	69 (22%)	98 (26%)	86 (29%)	620 (28%)	-0.4 (-3.7, 3.1)
	Benzodiazepines	114 (49%)	102 (49%)	142 (60%)	163 (57%)	161 (57%)	177 (56%)	243 (65%)	178 (59%)	1280 (57%)	9.9 (7.3, 12.6)
	Cocaine	3 (1%)	5 (2%)	4 (2%)	12 (4%)	4 (1%)	19 (6%)	31 (8%)	28 (9%)	106 (5%)	41.2 (27.9, 55.9)
	Alcohol	84 (36%)	61 (29%)	83 (35%)	86 (30%)	122 (43%)	137 (43%)	152 (41%)	121 (40%)	846 (38%)	10.9 (7.7, 14.3)

* Derived from Poisson regression.

Table A2.2: Characteristics of and trends in heroin/morphine-related deaths during 1996-2003 among persons aged 15-54 years in Scotland

Characteristics of death		Calendar year of death								**Total**	**Annual change* % (95% CI)**
		1996	1997	1998	1999	2000	2001	2002	2003		
All		82 (100%)	73 (100%)	116 (100%)	163 (100%)	186 (100%)	201 (100%)	224 (100%)	164 (100%)	1209 (100%)	13.8 (10.9, 16.7)
Cause of death:											
	Drug abuse/accidental poisoning	76 (93%)	67 (92%)	106 (91%)	150 (92%)	171 (92%)	175 (87%)	192 (86%)	144 (88%)	1081 (89%)	12.6 (9.7, 15.7)
	Intentional self-poisoning	5 (6%)	2 (3%)	6 (5%)	2 (1%)	8 (4%)	7 (3%)	7 (3%)	5 (3%)	42 (4%)	8.1 (-5.4, 23.5)
	Undetermined	1 (1%)	4 (5%)	4 (3%)	11 (7%)	7 (4%)	19 (9%)	25 (11%)	15 (9%)	86 (7%)	34.3 (20.9, 49.1)
Day of week	Mon-Thurs	52 (63%)	41 (56%)	71 (61%)	77 (47%)	99 (53%)	110 (55%)	134 (60%)	84 (51%)	668 (55%)	12.7 (9.0, 16.6)
	Fri-Sun	30 (37%)	32 (44%)	45 (39%)	86 (53%)	87 (47%)	91 (45%)	90 (40%)	80 (49%)	541 (45%)	15.0 (10.7, 19.5)
Gender	Male	71 (87%)	58 (79%)	97 (84%)	140 (86%)	158 (85%)	180 (90%)	194 (87%)	149 (91%)	1047 (87%)	14.9 (11.8, 18.0)
	Female	11 (13%)	15 (21%)	19 (16%)	23 (14%)	28 (15%)	21 (10%)	30 (13%)	15 (9%)	162 (13%)	7.0 (0.0, 14.5)
Age (years)	15-24	23 (28%)	22 (30%)	36 (31%)	53 (33%)	51 (27%)	49 (24%)	51 (23%)	35 (21%)	320 (26%)	8.3 (3.2, 13.7)
	25-34	45 (55%)	37 (51%)	55 (47%)	75 (46%)	83 (45%)	92 (46%)	91 (41%)	77 (47%)	555 (46%)	11.2 (7.2, 15.4)
	35-54	14 (17%)	14 (19%)	25 (22%)	35 (22%)	52 (28%)	60 (30%)	82 (37%)	52 (32%)	334 (28%)	24.4 (18.3, 30.8)

* Derived from Poisson regression.

Table A2.2: Characteristics of and trends in heroin/morphine-related deaths during 1996-2003 among persons aged 15-54 years in Scotland (Continued)

Characteristics of death		Calendar year of death								**Total**	**Annual change* % (95% CI)**
		1996	1997	1998	1999	2000	2001	2002	2003		
Health-board	Glasgow	57 (70%)	37 (51%)	65 (56%)	69 (42%)	85 (46%)	78 (39%)	93 (42%)	60 (37%)	544 (45%)	6.5 (2.6, 10.5)
	Lothian	4 (5%)	3 (4%)	6 (5%)	6 (4%)	11 (6%)	21 (10%)	4 (2%)	4 (2%)	59 (5%)	9.4 (-2.3, 22.4)
	Grampian	9 (11%)	10 (14%)	13 (11%)	26 (16%)	17 (9%)	28 (14%)	31 (14%)	25 (15%)	159 (13%)	16.8 (8.9, 25.4)
	Argyll & Clyde	3 (4%)	7 (10%)	15 (13%)	21 (13%)	25 (13%)	16 (8%)	25 (11%)	22 (13%)	134 (11%)	18.3 (9.5, 27.9)
	Lanarkshire	4 (5%)	6 (8%)	12 (10%)	16 (10%)	20 (11%)	17 (8%)	23 (10%)	19 (12%)	117 (10%)	19.2 (9.7, 29.5)
	Tayside	2 (2%)	1 (1%)	0 (0%)	1 (1%)	3 (2%)	4 (2%)	2 (1%)	8 (5%)	21 (2%)	35.4 (9.3, 67.8)
	Ayrshire & Arran	2 (2%)	2 (3%)	2 (2%)	7 (4%)	13 (7%)	20 (10%)	22 (10%)	11 (7%)	79 (7%)	35.4 (9.3, 67.8)
	Elsewhere	1 (1%)	7 (10%)	3 (3%)	17 (10%)	12 (6%)	17 (8%)	24 (11%)	15 (9%)	96 (8%)	25.9 (14.5, 38.4)
Drugs detected:	Methadone	11 (13%)	12 (16%)	12 (10%)	17 (10%)	19 (10%)	29 (14%)	32 (14%)	22 (13%)	154 (13%)	15.7 (7.7, 24.2)
	Benzodiazepines	37 (45%)	37 (51%)	70 (60%)	97 (60%)	109 (59%)	117 (58%)	166 (74%)	103 (63%)	736 (61%)	18.3 (14.5, 22.3)
	Cocaine	2 (2%)	1 (1%)	3 (3%)	5 (3%)	4 (2%)	12 (6%)	16 (7%)	21 (13%)	64 (5%)	50.2 (31.2, 71.9)
	Alcohol	39 (48%)	23 (32%)	49 (42%)	55 (34%)	81 (44%)	96 (48%)	109 (49%)	75 (46%)	527 (44%)	17.1 (12.6, 21.7)

* Derived from Poisson regression.

Table A2.3: Characteristics of and trends in methadone-related deaths during 1996-2003 among persons aged 15-54 years in Scotland

Characteristics of death		Calendar year of death								**Total**	**Annual change* % (95% CI)**
		1996	1997	1998	1999	2000	2001	2002	2003		
All		99 (100%)	86 (100%)	64 (100%)	63 (100%)	55 (100%)	69 (100%)	98 (100%)	86 (100%)	620 (100%)	-0.4 (-3.7, 3.1)
Cause of death:											
Drug abuse/accidental poisoning		86 (87%)	67 (78%)	57 (89%)	59 (94%)	49 (89%)	59 (86%)	78 (80%)	71 (83%)	526 (85%)	-1.0 (-4.6, 2.8)
Intentional self-poisoning		8 (8%)	7 (8%)	0 (0%)	0 (0%)	2 (0%)	0 (0%)	6 (6%)	8 (9%)	31 (5%)	-0.9 (-15.0, 15.5)
Undetermined		5 (5%)	12 (14%)	7 (11%)	4 (6%)	4 (7%)	10 (14%)	14 (14%)	7 (8%)	63 (10%)	5.1 (-5.6, 17.1)
Day of week	Mon-Thurs	36 (36%)	39 (45%)	23 (36%)	27 (43%)	32 (58%)	37 (54%)	46 (47%)	39 (45%)	279 (45%)	3.6 (-1.6, 9.0)
	Fri-Sun	63 (64%)	47 (55%)	41 (64%)	36 (57%)	23 (42%)	32 (46%)	52 (53%)	47 (55%)	341 (55%)	-3.5 (-7.9, 1.1)
Gender	Male	75 (76%)	71 (83%)	54 (84%)	49 (78%)	42 (76%)	55 (80%)	79 (81%)	65 (76%)	490 (79%)	-0.7 (-4.4, 3.3)
	Female	24 (24%)	15 (17%)	10 (16%)	14 (22%)	13 (24%)	14 (20%)	19 (19%)	21 (24%)	130 (21%)	0.7 (-6.5, 8.6)
Age (years)	15-24	46 (47%)	40 (47%)	31 (48%)	27 (43%)	16 (29%)	21 (30%)	29 (30%)	25 (29%)	235 (38%)	-9.5 (-14.5, -4.2)
	25-34	41 (41%)	37 (43%)	25 (39%)	22 (35%)	24 (44%)	35 (51%)	46 (47%)	37 (43%)	267 (43%)	1.8 (-3.4, 7.2)
	35-54	12 (12%)	9 (11%)	8 (13%)	14 (22%)	15 (27%)	13 (19%)	23 (24%)	24 (28%)	118 (19%)	15.0 (6.1, 24.8)

* Derived from Poisson regression.

Table A2.3: Characteristics of and trends in methadone-related deaths during 1996-2003 among persons aged 15-54 years in Scotland (Continued)

Characteristics of death		Calendar year of death								**Total**	**Annual change* % (95% CI)**
		1996	1997	1998	1999	2000	2001	2002	2003		
Health-board	Glasgow	25 (25%)	17 (20%)	14 (22%)	19 (30%)	14 (25%)	12 (17%)	33 (34%)	39 (45%)	173 (28%)	9.7 (2.7, 17.2)
	Lothian	38 (38%)	31 (36%)	23 (36%)	19 (30%)	9 (16%)	14 (20%)	22 (22%)	19 (22%)	175 (28%)	-11.2 (-16.9, -5.1)
	Grampian	10 (10%)	8 (9%)	5 (8%)	7 (11%)	8 (15%)	9 (13%)	11 (11%)	5 (6%)	63 (10%)	-1.1 (-11.2, 10.2)
	Argyll & Clyde	7 (7%)	4 (5%)	4 (6%)	2 (3%)	7 (13%)	6 (9%)	8 (8%)	4 (5%)	42 (7%)	2.3 (-10.3, 16.7)
	Lanarkshire	1 (1%)	2 (2%)	5 (8%)	3 (5%)	2 (4%)	3 (4%)	6 (6%)	4 (5%)	26 (4%)	13.5 (-4.4, 34.8)
	Tayside	14 (14%)	17 (20%)	9 (14%)	7 (11%)	7 (13%)	12 (17%)	2 (2%)	2 (2%)	70 (11%)	-19.3 (-27.7, -9.9)
	Ayrshire & Arran	1 (1%)	3 (3%)	1 (2%)	4 (6%)	1 (2%)	6 (9%)	8 (8%)	4 (5%)	28 (5%)	22.9 (3.4, 46.1)
	Elsewhere	3 (3%)	4 (5%)	3 (5%)	2 (3%)	7 (13%)	7 (10%)	8 (8%)	9 (10%)	43 (7%)	19.9 (4.5, 37.5)
Drugs detected:	Heroin	11 (11%)	12 (14%)	12 (19%)	17 (27%)	19 (35%)	29 (42%)	32 (33%)	22 (26%)	154 (25%)	15.7 (7.7, 24.2)
	Benzodiazepines	50 (51%)	48 (56%)	48 (75%)	44 (70%)	35 (64%)	43 (62%)	69 (70%)	60 (70%)	397 (64%)	3.7 (-0.7, 8.3)
	Cocaine	0 (0%)	1 (1%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)	6 (6%)	7 (8%)	15 (2%)	89.7 (32.6, 171)
	Alcohol	25 (25%)	20 (23%)	16 (25%)	14 (22%)	19 (35%)	27 (39%)	28 (29%)	22 (26%)	171 (28%)	3.2 (-3.3, 10.2)

* Derived from Poisson regression

Appendix 3

Figure A3.1: Distribution of blood morphine concentrations (n=176)

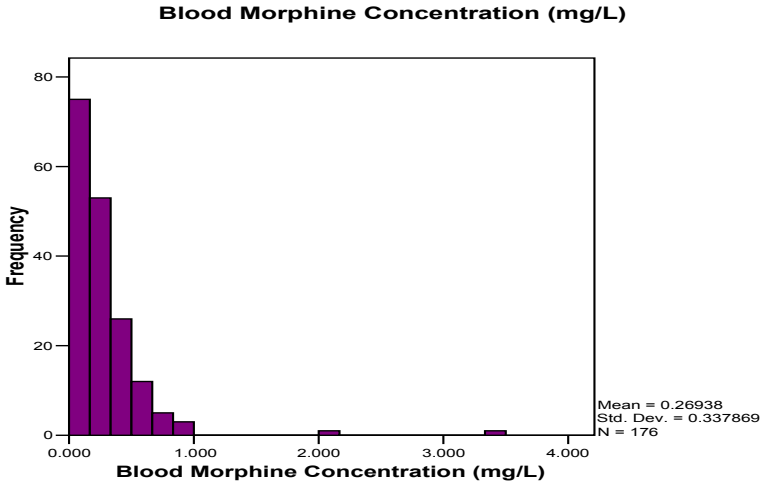


Figure A3.2: Distribution of blood methadone concentrations (n=80)

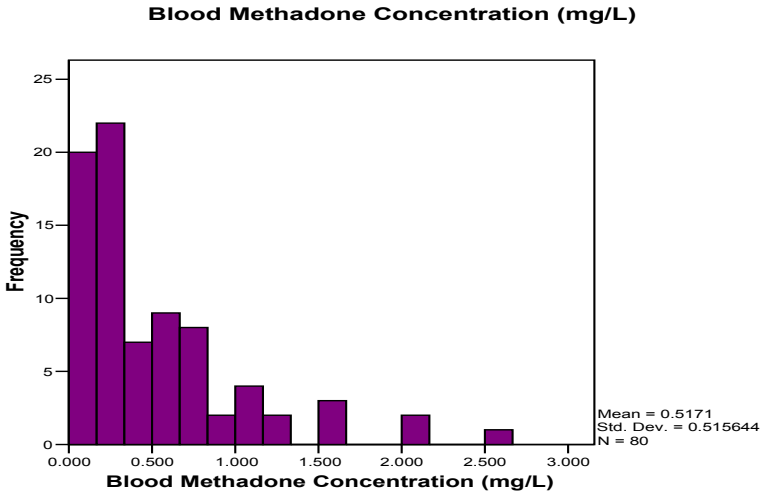


Figure A3.3: Distribution of blood alcohol concentrations (n=153)

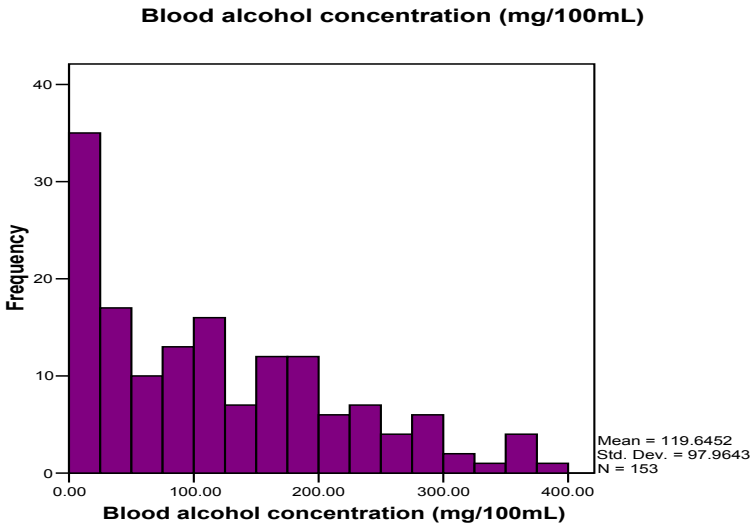


Table A3.4: Comparison of drug related deaths in Scotland and London

Characteristic	Scotland		London		Test of Difference
Total	273		148		
Sex					
% (n) male	81.7%	(223)	81.1%	(120)	*NS**
Age					
Mean (median) age	31.8	(31)	35.7	(34)	*p < 0.001^*
Toxicology					
Heroin/morphine	65.6%	(179)	66.9%	(99)	*NS**
Methadone	30.4%	(83)	31.8%	(47)	*NS**
Cocaine	9.9%	(27)	41.9%	(62)	*p < 0.001**
MDMA/Amphetamines	9.5%	(26)	12.2%	(18)	*NS**
Alcohol	54.9%	(150)	56.1%	(83)	*NS**
Benzodiazepines	69.2%	(189)	40.5%	(60)	*p < 0.001**
Dihydrocodeine	18.7%	(51)	10.8%	(16)	*p = 0.03**
Mean (median) heroin toxicology (mg/L)	0.27	(0.2)	0.36	(0.26)	*p = 0.045^*
Mean (median) methadone toxicology (mg/L)	0.52	(0.309)	0.87	(0.54)	*p < 0.01^*
Mean (median) alcohol toxicology (ml/100ml)	119.6	104	87.1	59	*p = 0.01^*
Substitute treatment					
yes	25.6%	70	27.7%	41	*NS**
methadone	17.9%	49	25.0%	37	*NS**
DHD	8.4%	23	2.7%	4	*p=0.03**
Deaths with positive methadone toxicology *and* evidence of methadone prescription	51.8%	43	55.3%	26	*NS**
Deaths with positive DHD toxicology *and* evidence of DHD prescription	35.3%	18	12.5%	2	*NS**
Prison history					
yes	47.6%	130	40.5%	60	*NS**
released < 3 months	17.2%	47	10.1%	15	*p=0.05*
Witness present					
yes	48.4%	(132)	60.8%	(90)	*p < 0.01**
Ambulance called					
yes	81.7%	(223)	90.5%	(134)	*p < 0.05**
If ambulance called, dead on arrival					
yes	85.2%	(190)	85.1%	(114)	*NS**
Known IDU					
yes	53.8%	(147)	60.8%	(90)	*NS**
Route of fatal dose					
Inject	54.6%	(149)	64.9%	(96)	*p < 0.05**
Non-inject	43.6%	(119)	26.4%	(39)	
Not able to be determined	11.7%	(32)	10.8%	(16)	

Table A3.4: Comparison of drug related deaths in Scotland and London (Continued)

Characteristic	Scotland		London		Test of Difference
Usual type of accommodation					
house/flat	81.3%	(222)	67.6%	(100)	*p < 0.01**
hotel/motel	2.9%	(8)	2.7%	(4)	
hostel resident	7.3%	(20)	7.4%	(11)	
street homeless	1.8%	(5)	5.4%	(8)	
caravan/camper/car	0.7%	(2)	2.0%	(3)	
roofless/sofa surfer	4.0%	(11)	6.8%	(10)	
other	0.0%		4.1%	(6)	
unknown	1.8%	(5)	4.1%	(6)	
Place of death					
own home	47.6%	(130)	43.9%	(65)	*NS**
home of family/friend	27.1%	(74)	20.3%	(30)	
hotel/motel/hostel	8.8%	(24)	11.5%	(17)	
public space	3.7%	(10)	7.4%	(11)	
hospital	8.8%	(24)	11.5%	(17)	
other	3.7%	(10)	4.7%	(7)	
unknown	0.4%	(1)	0.7%	(1)	
Time of death					
Rapid/instant	9.2%	(25)	6.8%	(10)	*p < 0.01**
Within the hour	15.4%	(42)	6.1%	(9)	
Several hours	44.7%	(122)	27.7%	(41)	
12 hours or more	2.9%	(8)	3.4%	(5)	
A number of days	0.7%	(2)	3.4%	(5)	
Not able to be determined	27.1%	(74)	52.7%	(78)	

Note: ^ T-test, * Chi2

Appendix 4

Table A4.1: List of potential interventions offered to cases of drug-related death in the 6 months prior to death (n=237)

A. SOCIAL	B. MEDICAL
1. Food distribution	**20. Medical consultation**
2. Clothes washing	**21. Other medical care**
3. Clothing distribution	**22. General hospitalisation**
4. Shower/hygiene	**23. Nursing care**
5. Help finding accommodation	**24. General emergency**
6. Night shelter	**25. General prevention and health promotion**
7. Accommodation	
8. Emergency social accommodation	D. MENTAL HEALTH
9. Social reintegration, help finding work	
10. Legal/administrative advice or aid	**60. Emergency psychiatric care**
11. Financial assistance	**61. Outpatient psychiatric consultation**
12. Travel expenses	**62. On-site delivery of psychotropic treatment**
13. Prison work	**63. Individual psychotherapy**
14. Prison Transitional Care/Community	**64. Psychiatric hospitalisation**
	65. Family therapy
C. CARE STRATEGY	**66. Group therapy**
	67. Psychological consultation
80. Somewhere to sit	**68. Occupational therapy**
81. A place to talk	**69. Discussion groups**
82. Low threshold/drop in	
83. Case management	E. SUBSTANCE ABUSE
84. To speak to Mr/Mrs X	
85. Information and orientation	**40. Substance misuse assessment**
86. Support and training for carers	**41. Substitution programme**
87. Holistic care	**42. Detoxification (short term reduction)**
88. Street outreach work	43. On-site needle/syringe exchange
89. Care at client's home	**44. Outreach needle/syringe exchange**
90. Day care	**45. Counselling**
91. Advocacy	**46. Drug Treatment & Testing Order**
	47. Put on Waiting list
	48. Motivational enhancement

Interventions highlighted in bold text are those which were recorded as having been offered to individuals.

Table A4.2: Prescribing details of cases in methadone treatment at time of death (n=40)

Case ID	Dose at death (mg)	Duration of last dose (weeks)	Previous dose (mg)	Duration of methadone treatment (months)
134	-	-	-	-
246	4	3	6	7
152	10	5 days	12	5
8	16	6	15	N/K***
202	20	3	13	7
175	30	1 day	10	16
136	30	-	nr	82
144	30	-	35	88
32	30	7 days	50	30
259	35	24	40	N/K
216	40	10 days	30	2
169	45	-	nr	N/K
174	45	9	35	5
271	45	15	35	37
287	45	-	nr	N/K
187	45	10 days	40	5
190	50	-	30	N/K
198	50	4	40	6 days
73	50	3 days	Nr	3 days
132	50	12	40	N/K
282	50	20	55	N/K
252	50	4	40	5
262	50	21	45	6
232	50	7 days	40	19
	50	14	40	18
	60	8	55	10
234	60	8 days	50	73
	65	2	58	84
166	65	4	60	5
76	70	2	Nr	<1
54	80	-*	Nr**	N/K
204	80	-	70	2
206	80	16	70	17
220	80	2 days	Nr	2 days
118	80	-	Nr	N/K
24	90	32	80	5
61	90	5	Nr	1
256	90	4	110	5
7	95	52	100	40
108	100	52	Nr	12

*-=no information
**nr=no dose change recorded in notes
***N/K=not known

References

Best D, Man L, Zador D et al. Overdosing on opiates: Part 1: causes. Findings 2000; 4: 4-7, 16-20.

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

Carstairs V and Morris R. Deprivation and health in Scotland. Aberdeen: Aberdeen University Press, 1991

Darke S, Ross J and Hall W. Overdose among heroin users in Sydney, Australia: 1. prevalence and correlates of non-fatal overdose. *Addiction* 1996; 9:405-411.

Darke S and Zador DA. Fatal heroin 'overdose': a review. *Addiction* 1996; 12: 1765-1772.

Darke S and Ross J. Overdose risk perceptions and behaviours among heroin users in Sydney, Australia. *Eur Addict Res* 1997; 3: 87-92

Darke S, Ross J, Zador D, Sunjic S. Heroin related deaths in New South Wales, Australia, 1992-1996. Drug and Alcohol Dependence 2000; 60: 141-150.

Darke S and Ross J. The relationship between suicide and heroin overdose among methadone maintenance patients in Sydney, Australia. *Addiction* 2001; 96:1443-1453.

Darke S and Ross J. Suicide among heroin users: rates, risk factors and methods. *Addiction* 2002; 97: 1383-1394.

Dietze P, Fry C, Sunjic S, Bammer G, Zador D, Jolley D, Rumbold G. Using ambulance attendances to recruit people who have experienced non-fatal heroin overdose. *Drug and Alcohol Dependence* 2002; 67: 99-104.

Ghodse H, Oyefeso A, Kilpatrick B. Mortality of drug addicts in the United Kingdom, 1967-1993. *Int J Epidemiology*, 1998; 27:473-478.

Gossop M, Griffiths P, Powis B, Williamson S, Strang J. Frequency of non-fatal heroin overdose: survey of heroin users recruited in non-clinical settings. *BMJ* 1996; 313: 402.

Gossop M, Stewart D, Treacy S, Marsden J. A prospective study of mortality among drug misusers during a four-year period after seeking treatment. *Addiction* 2002; 97: 39-47.

Hickman M, Carnwath Z, Madden P, Farrell M, Rooney R, Ashcroft R, Judd A, Stimson G. Mortality and fatal overdose risk – pilot cohort study of heroin users recruited from specialist drug treatment sites in London. *Journal of Urban Health* 2003a; 90: 274-287.

Hutchinson S et al. One-year follow-up of opiate injectors treated with oral methadone in a GP centred programme. *Addiction* 2000; 95: 1055-1068.

Neale J. Suicidal intent in non-fatal illicit drug overdose. *Addiction* 2000; 95: 85-93.

National Programme on Substance Abuse Deaths (np-SAD). *Drug Related Deaths as reported by Coroners in England and Wales:* Annual Review 2001 and np-SAD Surveillance Report No. 9. European Centre for Addiction Studies, London, 2002.

Oliver P and Keen J. Concomitant drugs of misuse and drug using behaviours associated with fatal opiate related poisonings in Sheffield, UK, 1997-2000. *Addiction* 2003; 98:191-197.

Perret G, Deglon J-J, Kreek MJ, Ho A, La Harpe R. Lethal methadone intoxications in Geneva, Switzerland, from 1994 to 1998. *Addiction* 2000; 95: 1647-1653.

Risser D, Uhl A, Stichenwirth M et al. Quality of heroin and heroin related deaths from 1987 to 1995 in Vienna, Austria. *Addiction* 2000; 95: 375-382.

Risser D, Bonsch A, Schneider B. Family background of drug related deaths: a descriptive study based on interviews with relatives of deceased drug users. *J Forensic Sc* 1996; 41: 960-962.

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

Sell L and Zador D. Patients prescribed injectable heroin or methadone – their opinions and experiences of treatment. *Addiction* 2004; 99: 442-449

Seymour A, Black M, Jay J, Cooper G, Weir C, Oliver J. The role of methadone in drug-related deaths in the west of Scotland. *Addiction* 2003; 98: 995-1002.

Siegel S. Pavlovian conditioning and heroin overdose: reports by overdose victims. *Bulletin of the Psychonomic Society* 1984; 22-428-430.

Strang J, McCambridge J, Best D, Beswick T, Bearn J, Rees S, Gossop M. Loss of tolerance and overdose mortality after inpatient opiate detoxification: follow-up study. *BMJ* 2003; 326: 959-960.

Sunjic S and Zador DA. Methadone syrup related deaths in New South Wales, Australia, 1990-95. *Drug and Alcohol Review* 1999; 18: 409-415.

Warner-Smith M, Darke S, Lynskey M, Hall W. Heroin overdose: causes and consequences. Addiction 2001; 96: 1113-1125.

Weatherburn D and Lind B. Street level drug law enforcement and entry into methadone maintenance treatment. *Addiction* 2001; 96: 577-587.

White JM and Irvine RJ. Mechanisms of fatal opioid overdose. *Addiction* 1999; 94: 961-972.

Zador DA. Defining the nature of the problem: discussant paper. In: *Proceedings of an expert workshop on the induction and stabilisation of patients onto methadone:* Findings of an expert workshop. January 28th and 29th 1999, Adelaide, South Australia. Monograph Series No. 39. National Drug Strategy. Commonwealth Department of Health and Aged Care, Canberra, 2000.

Zador DA, Sunjic S, Darke S. Heroin related deaths in New South Wales, 1992: toxicological findings and circumstances. *Med J Aust* 1996: 164: 204-207.

Zador DA, Sunjic S and McLennan J. Circumstances and users' perceptions of heroin overdose at the time of the event and at one-week follow-up in Sydney, Australia: implications for prevention. *Addiction Research and Theory* 2001; (5): 407-424.

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