

Publication Report



The National Drug-related Deaths Database (Scotland) Report 2011

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Contents

Key Points	4
1. Introduction	5
1.1 Overview	5
1.2 Defining “Drug-Related Deaths”	5
1.3 National Records of Scotland (NRS) Report on Drug-Related Deaths 2011	5
2. Methods	8
2.1 Data Collection Development	8
2.2 Data Collection Process	8
2.3 Data Quality Assurance	9
2.4 Data Confidentiality and Information Governance	9
3. Results and Commentary	10
3.1 The National Drug Related Deaths Database Cohort for 2011	10
3.2 Socio-demographics	10
3.3 Drug Use History	12
3.4 Medical and Psychiatric History and Adverse Life Events	13
3.5 The Death	15
3.6 Contact with Services	17
3.7 Toxicology and Substitute Prescribing	18
3.8 Methadone Related Deaths	23
4. Discussion	25
4.1 Socio-Demographics and IV Drug Use	25
4.2 Contact with Services	27
4.3 Toxicology and Substitute Prescribing	27
4.4 Limitations and Future Considerations	29
5. References	31
Glossary	33
List of Tables	34
Contact	36
Further Information	36
Rate this publication	36
Appendices	37
A1 – National Records of Scotland Definition of a Drug-Related Death	37
A2 – Establishment of the National Forum on Drug-Related Deaths (NFDRD)	40
A3 – National Forum on Drug-Related Deaths Data Collection Sub-Group Membership	41
A4 – National Drug-Related Deaths Data Collection Co-ordinators	42
A5 – Construction of the 2011 NDRDD Cohort	43
A6 – Early Access Details (Including Pre-Release Access)	48
A7 – Publication Metadata (including revisions details)	49

A8 – ISD and Official Statistics..... 51

Key Points

- In 2011, there were 438 cases identified as eligible for inclusion in the NDRDD cohort (an increase from 365 in 2010).
- Over three quarters (78.3%) were males, over half (53.4%) had lived in the most deprived areas in Scotland and the 35-44 years age group accounted for the highest proportion of deaths (38.1%)
- Over two fifths (44.5%) of the cohort, where known, were a parent or parental figure. A total of 331 children lost a parent or parental figure to a drug-related death.
- Where known, nearly two thirds (63%) had a history of intravenous (IV) drug use, which is a lower proportion than in 2010 (70.8%).
- Over three quarters (77.4%) of the 2011 cohort had a medical condition recorded in the 6 months prior to death. IV drug users had a higher prevalence of medical conditions compared to those who were not known to have been an IV drug user.
- The prevalence of Hepatitis C amongst the drug-related deaths cohort has steadily increased over the period 2009-2011.
- Where known, almost two thirds of individuals (64.5%) had been in contact with a drug treatment service at some point in their lives.
- Where known, in the 6 months prior to death, one third (34.3%) had been released from police custody and almost one fifth (18.1%) had been released from prison.
- This year's report includes data on drugs 'present' in the body and drugs 'implicated' in the death. The presence of a drug in toxicology of the deceased individual does not necessarily mean that the drug was implicated in (contributed to) the death.
- The drug most frequently found to be present in the body at death was diazepam (81.4%) followed by methadone (57.3%), heroin/morphine (51.5%), anti-depressants (37.1%) and alcohol (37.1%). In 97% of cases there was more than one drug present. Opioids (methadone, heroin, morphine or buprenorphine) were present in 87.2% of cases.
- The drug most frequently implicated in the death was methadone (53.4%), followed by heroin/morphine (38.6%), diazepam (23.1%) and alcohol (21.2%). More than one drug was implicated in the death in the majority of cases (68.9%).
- In relation to drugs present, the proportion of deaths with heroin/morphine and alcohol has decreased over the period 2009-2011, while the proportion of deaths with methadone, diazepam and anti-depressants has increased over this period.
- In 2011, the majority of individuals (150, 60.7%) with methadone found in their toxicology were not in receipt of a methadone prescription at the time of death.
- Where toxicology information was known, a higher proportion of females (72.3%) had methadone present compared with males (53.1%). This pattern is similar to 2010, (56.6% and 41.8% for females and males respectively), although the gap between females and males has grown in 2011.
- Where known, almost three quarters (73.8%) of individuals in the 2011 NDRDD cohort were not currently in receipt of a prescribed substitute drug.

1. Introduction

1.1 Overview

This is the third report from the National Drug Related Deaths Database (NDRDD) for Scotland which presents data for the calendar year 2011. The NDRDD was established to collect detailed information regarding the nature and social circumstances of individuals who have died a drug-related death. This report supplements the routine reporting of drug-related deaths in Scotland by the National Records of Scotland (NRS), formerly known as the General Register Office for Scotland.

The NRS and NDRDD gather their information separately but since both sets of data concern drug-related deaths in Scotland, there is a great deal of overlap and therefore it is useful to draw comparisons. The NRS have found an increasingly upward trend in drug-related deaths in Scotland since 1997 [1] and the NDRDD reports have sought to contextualise these deaths in relation to the previous social circumstances of the deceased. Such contextualisation is used to inform policymakers and practitioners as to the optimal preventive, harm reduction and therapeutic interventions to reduce drug-related deaths in Scotland.

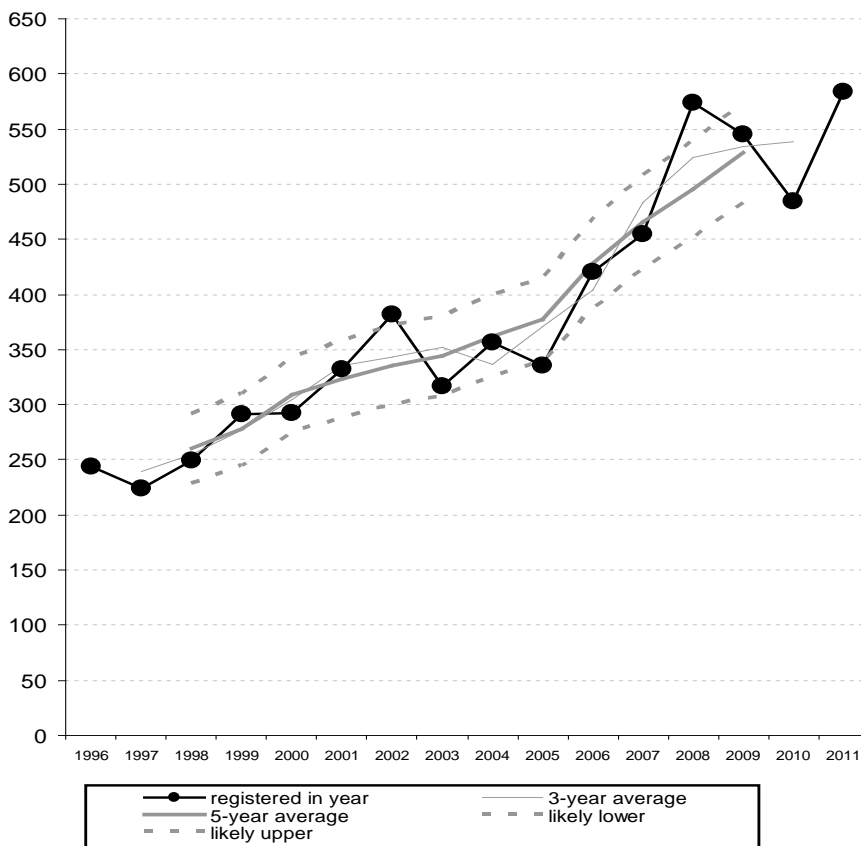
1.2 Defining “Drug-Related Deaths”

It is important to highlight that different organisations and authors adopt various definitions of what constitutes a drug-related death. For the purposes of this report, the two most notable definitions come from the NRS [1] and previous NDRDD reports [2-3]. The NRS obtains details of all deaths that are registered in Scotland and identifies drug-related deaths based on a supplementary questionnaire that is completed by the forensic pathologist. The NRS definition of what constitutes a drug-related death can be found in [Appendix A1](#). The definition of a drug-related death used by the previous two NDRDD reports [2-3] and the one which is used in this report matches that of the NRS with the exception that the current NDRDD definition does not include cases of confirmed suicide.

1.3 National Records of Scotland (NRS) Report on Drug-Related Deaths 2011

In its most recent publication [1], the NRS reported that 584 drug-related deaths were registered in Scotland in 2011. Figure 1 shows the long-term upward trend of drug-related deaths that has occurred in Scotland since 1997.

Figure 1. Drug-Related Deaths in Scotland, 3- and 5-Year Moving Averages and Likely Range of Values around the 5-Year Moving Average



Source: NRS (2012), Drug-Related Deaths in Scotland 2011 [1]

The sharp rise in drug-related deaths between 2010 and 2011 shown in Figure 1 can be interpreted in two ways depending upon whether one examines the 3-year or 5-year average. The 5-year average suggests that the number of drug-related deaths in 2011 are indicative of the continuation of an upward trend and therefore the 2010 figure was unusually low. However, in contrast, the 3-year average suggests that deaths in recent years were “levelling off” meaning the 2011 figure could be unusually high. Regardless, there was a 20% increase in the number of drug-related deaths between 2010 and 2011. This is the highest number ever recorded by the NRS and 76% higher than in 2001.

When comparing the annual average for 2007-2011 with that for 1997-2001, the NRS reported a greater increase in the percentage of females who had died drug-related deaths compared with males (117% and 85% increases respectively). Furthermore, regarding age, the largest increases were for those aged 35-44 years followed by 45-54 years. This contrasts with the number of drug-related deaths in those under 25 years of age which have declined. The NHS Board areas with the largest increases were Greater Glasgow and Clyde, Lothian and Lanarkshire.

Of the 584 drug-related deaths reported by NRS in 2011, methadone was implicated in or potentially contributed to 47% of the deaths followed by heroin and/or morphine (35% of the total), benzodiazepines (32% of the total), cocaine (6% of the total), amphetamines (4% of the total) and ecstasy (1% of the total). Compared to the equivalent figures from 2008,

2009 and 2010, the number of deaths linked with heroin and/or morphine decreased in 2011 and there was little change in the number of deaths linked with cocaine. However the number of deaths linked with methadone and benzodiazepines increased in 2011 as did the numbers for ecstasy and amphetamines despite figures for the latter being relatively small. Finally, alcohol was implicated in or contributed to 22% of the 584 drug-related deaths in 2011 which was a decrease from the previous three years. As was the case in 2009 [3] and 2010 [2], the majority of drug-related deaths registered in 2011 involved individuals who had taken more than one drug.

2. Methods

2.1 Data Collection Development

2.1.1 The National Forum on Drug-Related Deaths (NFDRD) Data Collection Sub-Group

In line with the previous two NDRDD projects [2-3], the National Forum on Drug-Related Deaths (NFDRD) Data Collection Sub-Group oversaw the process of data collection. For a more detailed account of how the NFDRD was originally established see [Appendix A2](#). Whilst the National Drug-Related Deaths Database is led by ISD, the NFDRD Data Collection Sub-Group comprises of individuals from a wide range of organisations and professional backgrounds. See [Appendix A3](#) for a full list of the group members.

2.1.2 The NDRDD Data Collection Form

The data collection form used for the database was developed by the NFDRD Data Collection Sub-Group. It is designed to collect data on a wide range of details concerning the individuals' social circumstances and health. These variables include socio-demographic information, drug use history, medical history, circumstances surrounding the death, prescription of substitute drugs and drugs detected in the person's body through toxicological and pathological examination. In addition, data are collected regarding the individual's contact with services prior to death including health, social care and criminal justice services. The dataset has undergone some small refinements each year since its inception, but the core dataset has remained unchanged.

2.2 Data Collection Process

2.2.1 Case Identification

In the event of an unexpected death, the police complete a Sudden Death Report which is passed to the Procurator Fiscal. The Procurator Fiscal then calls for a full pathological and toxicological post mortem examination to be conducted to determine the cause of death. On completion of the post mortem examination, the Local Critical Incident Monitoring Group (see Section 2.2.2 below) and Data Collection Co-ordinator decide if the case matches the inclusion criteria for the NDRDD (i.e. if it is a drug-related death as per the NDRDD definition). If these criteria are met, a case record is submitted to ISD.

2.2.2 Local Area Drug-related Death Surveillance

Drug-related deaths in Scotland are recorded and examined by Local Critical Incident Monitoring Groups who often collaborate with the police and Procurator Fiscal to identify such cases in their local area. Each area has a Data Collection Co-ordinator who works closely with the Local Critical Incident Monitoring Group and other key partners to collate the information on each drug-related death. See [Appendix A4](#) for a list of the local Data Collection Co-ordinators.

2.2.3 Data Sources and Data Collection

In addition to the Sudden Death Report completed by the police and the pathology report, information surrounding the circumstances of the deceased is collected from a wide range of sources. These sources include the Scottish Prison Service and Scottish Ambulance

Service as well as notes from drug treatment services, GPs, psychiatrists, hospitals and pharmacies. For most NDRDD data items, the main information sources were identical for all Health Boards in Scotland. However, for some items there was variability in their recording depending on local practice.

2.2.4 Information Support, Data Entry and Data Transfer

The electronic spreadsheet used for data collection in 2010 was also used in 2011. As was the case in 2009 and 2010, ISD received the data into a restricted mailbox via the Government Secure Internet email network. This data was then entered into a secure Oracle database at ISD. Information that could identify the deceased individuals was removed prior to data extraction and analysis using SPSS software. The ISD NDRDD manager was available to provide IT support, advice and guidance throughout the whole process.

2.2.5 Incorporation of “Drugs Implicated” Data from NRS

The NDRDD contains data which indicate the presence of drugs in the body through toxicological examination but it does not contain details as to whether or not the drug was implicated in or contributed to the death. Such information, however, is collected by the National Records of Scotland (NRS). The presence of a drug in the toxicology of a deceased individual does not necessarily mean that the drug contributed towards the death. Assessment as to whether or not a drug present in the body was implicated in or contributed to the death is conducted by the pathologists.

In contrast to the previous two NDRDD reports [2-3] which did not include data regarding “drugs implicated”, this report has been able to incorporate this information which was supplied to ISD by NRS with the relevant permission. Once received, the NRS data were matched to the NDRDD data. The supplementary NRS information allows for a deeper analysis of the circumstances of individuals in relation to the drugs that have contributed towards their deaths.

2.3 Data Quality Assurance

In addition to front-end validation within the electronic spreadsheet and Oracle database, the NDRDD data were cross-matched with records obtained from the NRS Vital Events database which contains the records of all those who die in Scotland. ICD-10 codes were then extracted and compared with the relevant codes within the NDRDD. This quality assurance process made it possible to thoroughly investigate any anomalous differences between the NDRDD and NRS data. Details regarding the outcomes of this matching process can be found in [Appendix A5](#).

2.4 Data Confidentiality and Information Governance

The data collected for the NDRDD are not directly covered by the Data Protection Act 1998. However, ISD considers the data to be protected under a duty of confidence. Person-identifying details regarding each individual are entered into the NDRDD as this information is necessary for potential linkage to other data sets and cross-matching. However, all measures are taken to protect the confidentiality of these data and the NDRDD project adheres to the 6 Caldicott Guardian Principles.

3. Results and Commentary

3.1 The National Drug Related Deaths Database Cohort for 2011

In 2011, a total of **438** records were identified as eligible for inclusion in the NDRDD cohort. This is a rise in the number of cases reported compared to 2010 (365).

In 2011, a total of 496 records were returned to ISD for the NDRDD but 58 (11.7%) did not meet the criteria for inclusion. The reasons for excluding these 58 cases are set out in [Appendix A5](#). The proportion of cases that were excluded from the 2011 NDRDD cohort was lower than for 2010 (12.3%).

After matching to NRS drug-related deaths records, 106 records were identified that should have been returned to ISD for the NDRDD but for which records were not received. Full details on these are set out in [Appendix A5](#). In 2011, the proportion of missing records was comparable to 2010 (19.4% (106/544) and 18.3% (82/447) respectively).

Investigation into the recording of data items as unknown was able to confirm that the majority of these were confirmed unknowns as opposed to incompleteness of data entry. In general, data completeness for individual data items was of a similar standard compared to 2010 data.

The remainder of this section presents the findings from the 2011 cohort along with comparisons to the equivalent 2010 results. The data tables include findings from the 2009, 2010 and 2011 cohorts, allowing comparisons to be made across the three cohorts to date. Key trends across the three years are highlighted in Section 4.

3.2 Socio-demographics

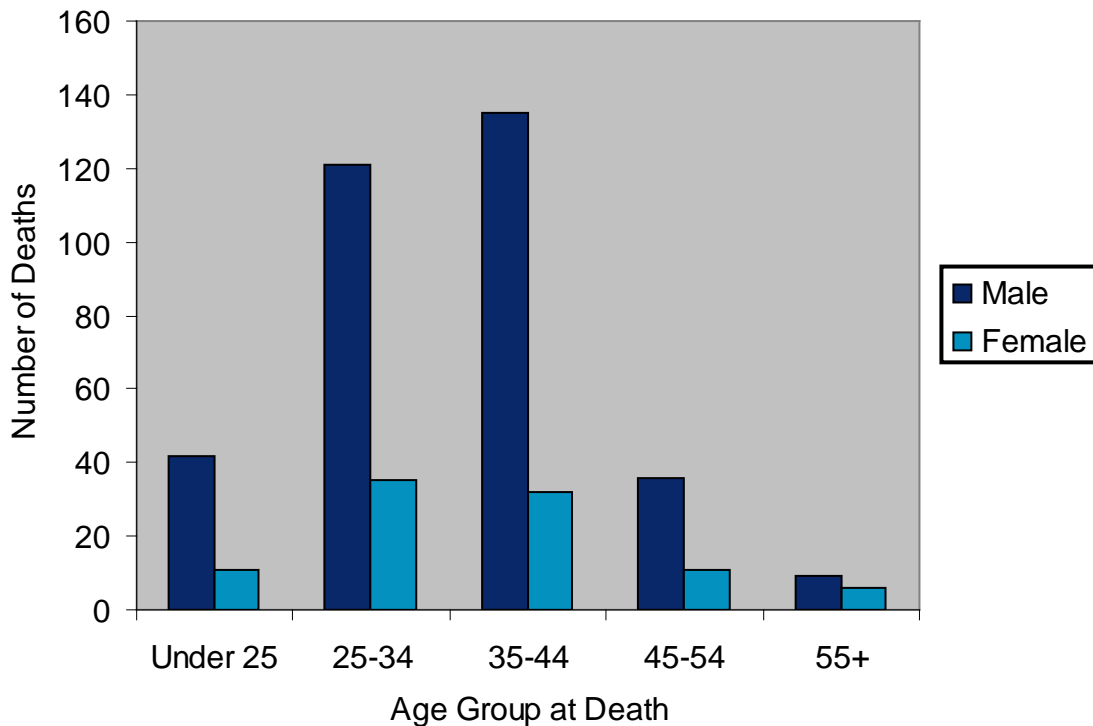
3.2.1 Geographical Area

Tables [1](#) and [2](#) show the figures and crude mortality rates for the NDRDD reported in 2011 by council area and Health Board. Geographically, the council areas with the highest crude mortality rates were Dundee City (0.19 deaths per 1000 population), followed by Inverclyde (0.18 deaths per 1000 population) and City of Glasgow (0.17 deaths per 1000 population). Orkney was the only council area with a zero rate recorded. The Health Boards with the highest crude mortality rates were the Shetland Islands (0.13 deaths per 1000 population) followed by Greater Glasgow and Clyde (0.12 deaths per 1000 population) with the Orkney Islands recording a zero rate. These findings should be interpreted with caution given the small numbers in the Island Board figures.

3.2.2 Age and Gender

The age and gender breakdown is shown in [Table 3](#) and Figure 2. Over three quarters were male (343, 78.3%) which is comparable to 2010 (289, 79.2%). The age group with the highest proportion of deaths was 35-44 years (167, 38.1%) followed by 25-34 years (156, 35.6%), under 25 years (53, 12.1%), 45-54 years (47, 10.7%) and over 55 years (15, 3.4%). The proportion of drug-related deaths was higher in 2011 for those aged 35-44 compared to 2010 (32.3%) but the proportion of those aged 45-54 was lower in 2011 than in 2010 (14.8%).

Figure 2. NDRDD Reported Frequency of Drug-Related Deaths: Age and Gender, 2011



3.2.3 Deprivation

The Scottish Index of Multiple Deprivation classifies postcode areas by deprivation on a scale of 1 to 5, with 1 being the least affluent. Deprivation status was known for 406 individuals (92.7%) in the cohort ([Table 4](#)). Of these, over half (217, 53.4%) lived in the most deprived neighbourhoods in Scotland. This percentage is comparable to 2010 (54.8%).

3.2.4 Living Arrangements

It was known in 432 cases (98.6%) where the deceased had lived prior to death ([Table 5](#)). It is important to note that individuals could have been reported as living at more than one place of residence at the time of death. The majority were reported to be living at home (263, 60.9%) while 91 (21.1%) were living with relatives. These percentages are comparable with 2010 (61.2% living at home and 19.5% living with relatives). The number of individuals reported to have lived with friends was 28 (6.5%) which was a proportional decrease from 2010 (10.6%). The proportions of those living in a hostel (23, 5.3%), homeless accommodation (13, 3%) and/or with no fixed abode/sleeping rough (26, 6%) were similar to 2010 (4.9%, 1.1%, 4% respectively).

In 420 cases (95.9%) it was known whom the deceased lived with prior to death ([Table 6](#)). In these cases, 205 (48.8%) lived alone which is a decrease from 2010 (53.5%). 63 individuals (15%) were reported to have lived with their parents, 29 (6.9%) with friends and 34 (8.1%) lived with other relatives. Finally, 90 (21.4%) individuals were reported to live with their spouse or partner which is an increase compared to 2010 (16.8%).

3.2.5 Children Under 16 Years (Parents/Parental Figure Of and Living With)

For 425 cases (97%), it was known whether or not the deceased was a parent or parental figure to a child or children under the age of 16 years ([Table 7](#)). Of these cases, 189 individuals (44.5%) were a parent/parental figure compared to 140 (39%) in 2010. The total number of children who lost a parent/parental figure due to a drug-related death in 2011 was 331. In 2010, this figure was 238.

Of the 425 cases, it was known for 409 (96.2%) whether or not the individual was living with a child at the time of death. Of these, the vast majority were not living with a child (368, 90%), however, 41 individuals (10%) were living with a child when they died. The proportion of individuals in the cohort living with a child prior to death was similar to 2010 (8.5%). Of the 331 children who lost a parent/parental figure in 2011, 67 (20.2%) of them were living with the parent/parental figure at the time of death. This figure is comparable to 2010 (18.9%).

3.3 Drug Use History

3.3.1 Known Drug Use Prior to Death

Of the total cohort of 438 cases, it was known in 430 cases (98.2%) whether or not the deceased was a known drug user prior to death ([Table 8](#)). Of these, 396 (92.1%) were a known drug user prior to their death. This is an increase from 2010 (86.1%).

3.3.2 Known Intravenous Drug Use by Length of Time of Use

In 2011, it was known for 359 cases (82%) whether or not the deceased had been an intravenous (IV) drug user prior to death ([Table 9](#)). Of these, 226 (63%) were a known IV drug user prior to death which, as a percentage, is a decrease compared to 2010 (70.8%).

Of the 226 known IV drug users, data on the length of IV use was available for 193 individuals (85.4%) ([Table 9](#)). Of these, 98 (50.8%) had been an IV drug user for up to 10 years and 95 (49.2%) had been an IV drug user for over 10 years. The length of time the individual was known to have been an IV drug user was not reported in 2010, but was in 2009. There was a higher proportion of individuals who had been an IV drug user for over 10 years in 2011 than in 2009 (43.9%).

3.3.3 Drug Detoxification in the Past 12 Months by Length of Time

It was known in 374 cases (85.4%) whether or not the deceased had undergone a drug detoxification in the 12 months prior to death ([Table 10](#)). Of these cases, the majority (328, 87.7%) had not undergone a drug detoxification which is a similar figure to 2010 (85.9%).

Of the remaining 46 individuals (12.3%) who had undergone a drug detoxification, data concerning the length of time this detoxification had occurred prior to death were available for all 46 cases ([Table 10](#)). Nearly one quarter of this group had undergone a drug detoxification in the month prior to death (11, 23.9%) and over half of the 46 individuals had experienced a drug detoxification within the 3 months prior to death (25, 54.3%). In 2010, the proportions of those undergoing a drug detoxification in the month and 3 months prior to death were higher (34% and 68% respectively).

3.3.4 Previous Non-Fatal Overdose Occurrences

It was known in 432 cases (98.6%) if the deceased had previous experience(s) of a non-fatal overdose ([Table 11](#)). Of these cases, a little over half had a previous experience of an overdose (226, 52.3%). This proportion is higher compared to 2010 (45.8%). Of those who had previous overdose experience, data about the number of these occurrences were available for 218 individuals (96.5%). Over two fifths (91, 41.7%) had one known occurrence of a non-fatal overdose while 33 (15.1%) were known to have non-fatally overdosed at least five times prior to their death. The proportion of individuals with one known occurrence of a non-fatal overdose was higher in 2011 than 2010 (38.6%) while the proportion of those with more than five non-fatal overdose occurrences was lower in 2011 than in 2010 (24%).

Further data were available for 211 individuals as to how long prior to death the most recent non-fatal overdose had occurred ([Table 12](#)). Of these, 28 individuals (13.3%) had most recently overdosed within the 3 months prior to death and 24 individuals (11.4%) had experienced their most recent overdose between 3 and 6 months prior to death. The proportion of individuals who non-fatally overdosed in the 3 months prior to death was lower in 2011 than in 2010 (20.8%) while the proportion of those who non-fatally overdosed in the 3-6 months prior to death was higher in 2011 than in 2010 (8.4%).

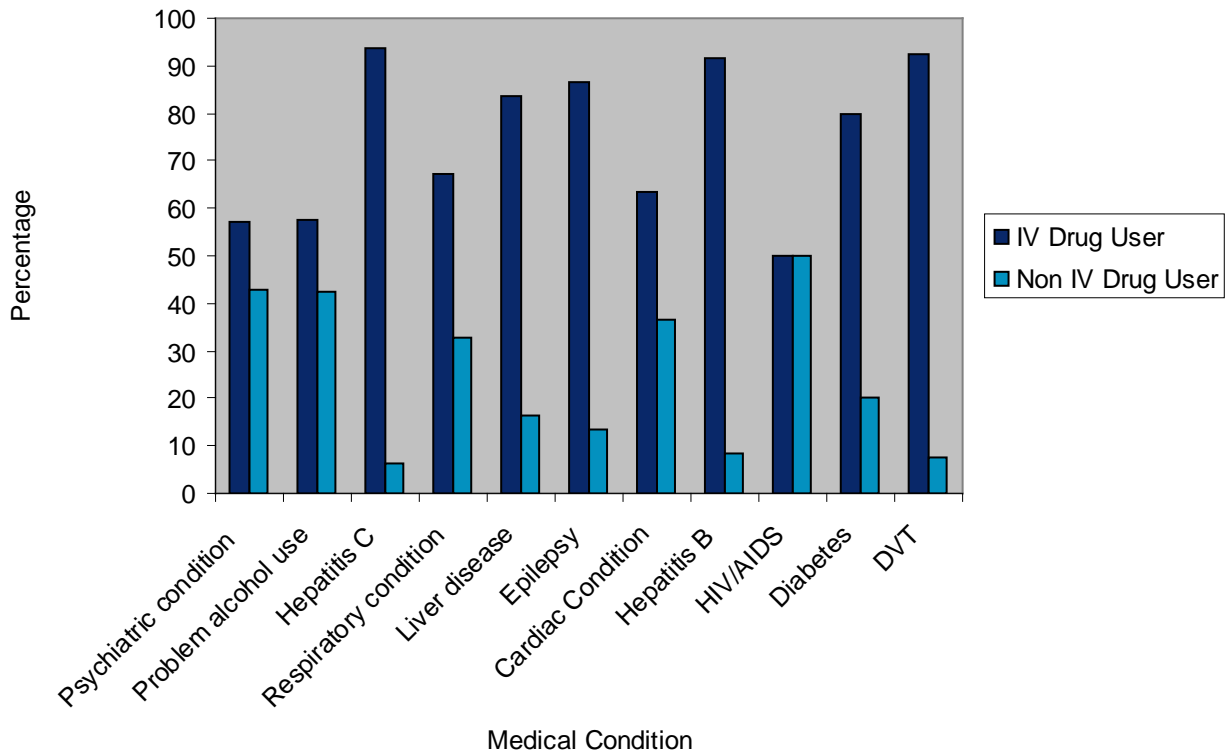
3.4 Medical and Psychiatric History and Adverse Life Events

3.4.1 Previous Medical History (In 6 Months Prior to Death)

There were 339 cases in the cohort (77.4%) that had a medical condition recorded in the 6 months prior to death ([Table 13](#)). This figure is higher than in the 2010 cohort (74.2%). In 2011, of those reported to have a medical condition, 207 (61.1%) had a psychiatric condition, 132 (38.9%) had problematic alcohol use, 95 (28%) had Hepatitis C, 67 (19.8%) had a respiratory condition and 45 (13.3%) had liver disease. The proportion of those with a psychiatric condition was higher in 2011 than in 2010 (55.4%). In contrast, the proportions of those with problematic alcohol use and/or a respiratory condition was lower in 2011 than in 2010 (47.6% problematic alcohol use and 25.1% respiratory condition in 2010). It should be noted that an individual could have had more than one medical condition.

Additional analysis was conducted to investigate any differences in the prevalence of medical conditions between those who were known to be IV drug users and those who were not (Figure 3, data not shown in the tables).

Figure 3. NDRDD Reported Medical Conditions by IV Drug Use Status, 2011



IV drug users had higher prevalence rates for every medical condition (except HIV/AIDS) compared to those who were not known to have been IV drug users. There were notable differences between IV and non IV drug users for those known to have had Hepatitis C, liver disease, epilepsy, deep vein thrombosis (DVT), Hepatitis B and diabetes.

IV drug use and diagnosed Hepatitis C were known for 93 individuals. Of these, 87 (93.5%) had Hepatitis C and were known to have been IV drug users whereas 6 (6.5%) individuals had Hepatitis C but were not known to have been IV drug users.

IV drug use and liver disease were known for 43 cases. Of these, 36 (83.7%) individuals had liver disease and were known IV drug users whereas 7 (16.3%) had liver disease but were not known IV drug users.

IV drug use and diagnosed epilepsy were known for 22 cases. Of these, 19 (86.4%) had epilepsy and were known IV drug users whereas 3 (13.6%) had epilepsy and were not known IV drug users.

Although the numbers were smaller, there were more IV drug users diagnosed with deep vein thrombosis (12/13, 92.3%), Hepatitis B (11/12, 91.5%) and diabetes (8/10, 80%) compared to those with the same medical conditions who were not known IV drug users.

When the length of time known to have been an IV drug user was taken into account, the largest proportions of known IV drug users with Hepatitis C (51/78, 65.4%), liver disease (28/35, 80%), epilepsy (13/17, 76.5%), deep vein thrombosis (8/9, 88.9%), Hepatitis B (10/11, 90.9%) and diabetes (5/6, 83.3%) were known to have been injecting for over 11 years (data not shown in the tables).

3.4.2 Previous Psychiatric History (In 6 Months Prior to Death)

207 cases (47.3%) from the 2011 cohort had a psychiatric condition recorded in the 6 months prior to death ([Table 14](#)). This figure is higher than in the 2010 cohort (41.1%). In 2011, of those who were known to have a psychiatric condition, the majority (134, 64.7%) had depression. This was followed by anxiety (82, 39.6%), schizophrenia (26, 12.6%), personality disorder (22, 10.6%) and post-traumatic stress disorder (11, 5.3%). There was an increase in the proportions of those with depression and/or schizophrenia in 2011 compared with 2010 where the equivalent 2010 proportions were 55.3% and 6.7% respectively. Furthermore, no individuals were reported as having bi-polar disorder in 2010 whereas 9 individuals (4.3%) were recorded as having the condition in 2011. For the remaining psychiatric conditions (anxiety, personality disorder and post traumatic stress disorder) the 2011 and 2010 proportions were comparable. It should be noted that an individual could have more than one psychiatric condition.

3.4.3 Recent Significant Events (In 6 Months Prior to Death)

In 2011, 250 individuals (57.1%) were recorded as having experienced a significant event in the 6 months prior to death ([Table 15](#)). This figure is lower than the 2010 cohort (60.3%). In 2011, of those known to have experienced a recent significant event, 38 (15.2%) had experienced a relationship breakdown which is a proportional increase compared to 2010 (11.8%). Eighteen individuals (7.2%) in the 2011 cohort had been assaulted and this figure is higher compared with 2010 (3.6%). The proportion of those with ill health or a recent diagnosis was lower in 2011 (59, 23.6%) than in 2010 (28.2%) as was the proportion of those who had relapsed (32, 12.8% in 2011 and 16.8% in 2010). Finally, in 2011, 26 individuals (10.4%) had suffered a bereavement, 28 (11.2%) had experienced homelessness or housing problems, 14 (5.6%) had child custody issues, 9 (3.6%) had lost their job and 8 (3.2%) had been arrested, charged, were a witness in a case or awaiting sentencing. These figures are all comparable with 2010. It should be noted that an individual could have more than one recent significant event recorded.

3.5 The Death

3.5.1 Place of Drug Use and Place of Death

Information on where the deceased was reported to have used the drug(s) present in their death was available for 412 individuals (94.1%) ([Table 16](#)). Of these cases, the majority (252, 61.2%) had taken drugs within their own home and 125 (30.3%) had taken drugs in another person's home. These figures are similar to 2010 (58.9% and 30.2% respectively). In 2011, a further 20 individuals (4.9%) had used drugs in a hostel, 16 (3.9%) had taken drugs outdoors, 8 (1.9%) in supported accommodation and 7 (1.7%) in temporary accommodation. Again these figures are comparable with 2010 with the exception of those taking drugs in a hostel which was lower than in 2010 (10%). A small number of individuals had taken drugs in indoor public places (5, 1.2%), hospital/A&E (3, 0.7%) and prison (1, 0.2%). These places were not reported on in 2010.

For all cases except one, information about where the deceased was pronounced dead was available ([Table 17](#)). Over half of the cases (231, 52.9%) died within their own home and nearly a quarter (107, 24.5%) died in the homes of other people. Forty eight individuals (11%) died in hospital, 19 (4.3%) in a hostel, 15 (3.4%) outdoors, 6 (1.4%) in supported accommodation, and 5 (1.1%) in temporary accommodation. These figures are all similar to 2010. In addition, 4 (0.9%) individuals died in an indoor public place and 1 (0.2%) died in prison. These places were not reported on in 2010.

3.5.2 Death by Day of the Week

It was known for all 438 cases which day of the week the deceased had died ([Table 18](#)). Proportionally more individuals died on a Sunday (77, 17.6%) than any other day, the same finding as in 2010.

3.5.3 Persons Present at Scene of Overdose (By Exact Location)

Whether or not someone was present at the scene of the death was known in 414 cases (94.5%) ([Table 19](#)). In 257 (62.1%) of these cases, at least one individual was present, whereas 157 (37.9%) of the deceased were alone. These figures are very similar to those in 2010.

The location of the person(s) present at the scene was known for 246 cases (95.7%). In the majority of these cases (129, 52.4%) the person(s) present at the scene was not in the same room at the point of overdose. This proportion is lower than in 2010 when 57.2% of the cases had someone present but not in the same room.

3.5.4 Ambulance Attendance and Attempted Resuscitation (By Whom)

It was known for all cases except one, whether or not the Scottish Ambulance Service attended the scene of death ([Table 20](#)). In the majority of cases (376, 86%) an ambulance did attend the scene while in 37 cases (8.5%) it did not attend. A small proportion of cases (24, 5.5%) did not require an ambulance because it was clear that the deceased was beyond medical intervention. These proportions are all similar to 2010.

Information concerning whether or not the deceased had received any resuscitation attempts prior to death was known for 430 cases (98.2%) ([Table 21](#)). Of these, 185 (43%) had received resuscitation, with the comparable percentage in 2010 being 46.9%. Of those who had received resuscitation in 2011, the person(s) who had attempted resuscitation was known in 182 cases ([Table 22](#)). In the majority of these cases, resuscitation was either attempted by ambulance staff (120, 65.9%), a friend (50, 27.5%), a relative (32, 17.6%), a spouse/partner/ex-partner (25, 13.7%) or hospital/A&E staff (19, 10.4%). Other individuals who had attempted resuscitation included witnesses (14, 7.7%), police (6, 3.3%), children (2, 1.1%), mental health/social care workers (2, 1.1%), a stranger (1, 0.5%) and a clinician (1, 0.5%). It should be noted that different people (in differing roles) may have attempted resuscitation on the same individual. These findings are broadly comparable with 2010. Of note, there was an increase in the proportion of relatives (9.6% in 2010) and a decrease in the proportion of witnesses (24.7% in 2010) who attempted resuscitation in 2011.

3.5.5 Naloxone Availability and Use

Naloxone is an opioid antagonist which is used to reverse the effects of an opioid overdose. The intention of the Data Collection Sub-Group was to collect information about the availability of “take-home” naloxone in the NDRDD as opposed to naloxone available through paramedics and medical staff. However, a close examination of the naloxone data in the 2010 and 2011 NDRDDs revealed that for the cases where naloxone was administered, this was done by a range of people including relatives, paramedics and hospital staff. Therefore it appears that the naloxone questions in the data collection form were not solely measuring “take-home” naloxone as was the intention.

With this in mind, of the 397 cases (90.6%) where naloxone availability was known, naloxone was reported to be available in 35 of these cases (8.8%) ([Table 23](#)). It was

known for 29 of these cases whether or not naloxone had been administered. Naloxone was administered in 21 of these cases (72.4%). Of these 21 cases, 16 (76.2%) were given naloxone by paramedics, 3 (14.3%) by hospital staff, 1 (4.8%) by a member of hostel staff and 1 (4.8%) by a relative (data not shown in the tables). In only these latter two cases, therefore, was the administration of naloxone almost certainly in the form of "take-home" naloxone, as it was administered by non-medical personnel.

The questions relating to naloxone in the data collection form have been refined for the collection of data in 2012 where a more accurate measure of naloxone, that is specifically "take-home," will be made.

3.6 Contact with Services

3.6.1 Contact with Drug Treatment Services

It was known for 400 cases (91.3%) whether or not the deceased had been in contact with a drug treatment service at any point prior to death ([Table 24](#)). Of these, nearly two thirds (258, 64.5%) had been in contact with a drug treatment service at some point in their lives compared to 62.4% in 2010. It was known for 248 individuals when their last contact with a drug treatment service has been. Of these, 118 (47.6%) had last been in contact within a month (under 4 weeks) prior to death, 52 (21.0%) between 1 and 6 months (4 to 26 weeks) prior to death and 78 (31.5%) over 6 months (over 26 weeks) prior to death ([Table 25](#)). The comparable figures for 2010 were 43.5%, 25.6% and 30.9%, respectively.

It was known for all 258 individuals who had ever been in contact with a drug treatment service, which type(s) of service(s) these were ([Table 26](#)). The majority of individuals (207, 80.2%) had been in contact with an addiction service, followed by 179 (69.4%) with a GP, 50 (19.4%) with A&E, 44 (17.1%) with psychiatric services and 19 (7.4%) with social work services. These figures are all similar to those in 2010.

3.6.2 Ever Been in Police Custody

Information about whether or not the deceased had been in police custody prior to death was known for 417 individuals (95.2%) ([Table 27](#)). Of these, 167 individuals (40%) had been in police custody prior to death. Of the 417 individuals, 143 (34.3%) had been released from police custody within the 6 months prior to death and 24 had been released over 6 months prior to death ([Table 28](#)). Of these 143 cases, 25 (17.5%) had been released in the week prior to death. Police custody information was not reported in 2010 but it was in 2009. The 2011 figures are comparable with 2009 when it was found that, where known, 35% of the cases had been in police custody prior to death.

3.6.3 Ever Spent Time in Prison

It was known for 431 cases (98.4%) whether or not the deceased had ever spent time in prison prior to death ([Table 29](#)). Of these, over half (234, 54.3%) had spent time in prison. Of the individuals who had spent time in prison, 201 (85.9%) were male and 33 (14.1%) were female.

Information about the number of weeks prior to death the individual had been released from prison was available for 232 cases (99.1%) ([Table 30](#)). One third of these (78, 33.6%) had been released in the 6 months prior to death. Of these, 19 (24.4%) were released in the week prior to death. Information regarding whether or not the deceased had ever been in prison was reported in 2009 and available but not reported in 2010. The 2011 figures are

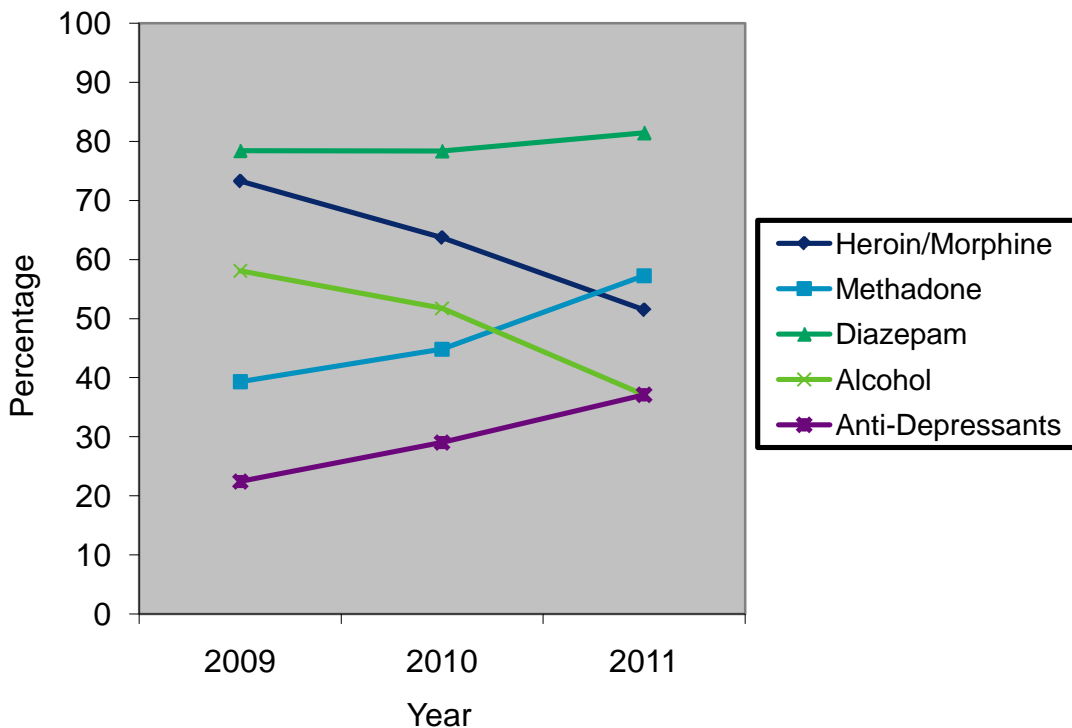
comparable with 2009 when it was found that, where known, 34.5% of individuals had been released from prison in the 6 months prior to death.

3.7 Toxicology and Substitute Prescribing

3.7.1 Deaths by Drug Type (Gender and Age Group)

Toxicology results showing the drugs *present* in the body at the time of death (but not necessarily contributing to the death) were available for 431 individuals (98.4%), 337 (78.2%) of whom were male and 94 (21.8%) of whom were female (Tables 31 and 32). Figure 4 shows how the percentages of the five most commonly present drugs at post mortem have changed over the three years that the NDRDD reports have been produced.

Figure 4. NDRDD Reported Five Most Common Drugs Present in Toxicology: 2009-2011



As was the case in 2009 and 2010, diazepam was the drug most commonly found to be present in the body at post mortem in 2011 (351, 81.4%). Diazepam was found in similar proportions for males (81.9%) and females (79.8%) as was the case in 2010 (78.2% and 78.9% for males and females respectively).

In 2011, the second most common drug found at post mortem was methadone (247, 57.3%). This differs from 2010 when methadone was the fourth most common drug after diazepam, heroin/morphine and alcohol. In 2010 methadone was present in 44.9% of cases and therefore its presence at post mortem increased in 2011. A higher proportion of females (72.3%) had methadone present compared with males (53.1%) and while this pattern is similar to 2010 (56.6% and 41.8% for females and males respectively), the gap between females and males grew in 2011.

Heroin/morphine was present in just over half of the 2011 cases (222, 51.5%) which is lower compared to 2010 (63.7%). The presence of heroin/morphine was higher in males (53.1%) than females (45.7%), which is the same pattern as 2010. However compared with 2010, the gap between males and females has widened slightly in 2011.

Alcohol was present in 160 cases (37.1%) in 2011 which is lower than in 2010 (51.8%). There was a slightly higher presence of alcohol in males (38%) than females (34%), which is a similar pattern compared to 2010 (53.3% and 46.1% for males and females respectively).

Anti-depressants were also found in 160 cases (37.1%) in 2011 which is an increase from 2010 (29.1%). The presence of anti-depressants was higher in females (59.6%) than males (30.9%). Whilst this is the same pattern found in 2010 (43.4% and 25.3% for females and males respectively), the gap between females and males increased.

The sixth most commonly present drug at post mortem was dihydrocodeine which was found in 78 cases (18.1%). This is an increase from 2010 (14.1%). Dihydrocodeine was present in a higher proportion of males (19.9%) than females (11.7%). This pattern is the opposite of 2010 which found it to be present in more females (18.4%) than males (13%).

Codeine was present in 77 cases (17.9%) which is a slight decrease from 2010 (19.7%). It was found to be present in a higher proportion of males (19.6%) than females (11.7%), which is a similar pattern compared to 2010 (21.1% and 14.5% for males and females respectively).

Cannabis was present in 76 cases (17.6%) which was an increase from 2010 (6.6%). Finally, the following four drugs were found to be present in a smaller number of cases: cocaine (57, 13.2%); amphetamines (28, 6.5%); tramadol (18, 4.2%) and ecstasy (9, 2.1%). The proportion of cocaine, amphetamines and ecstasy cases were all higher in 2011 than in 2010 with tramadol being the exception with a drop from 6.1% in 2010 to 4.2% in 2011.

3.7.2 Drugs Implicated in the Deaths

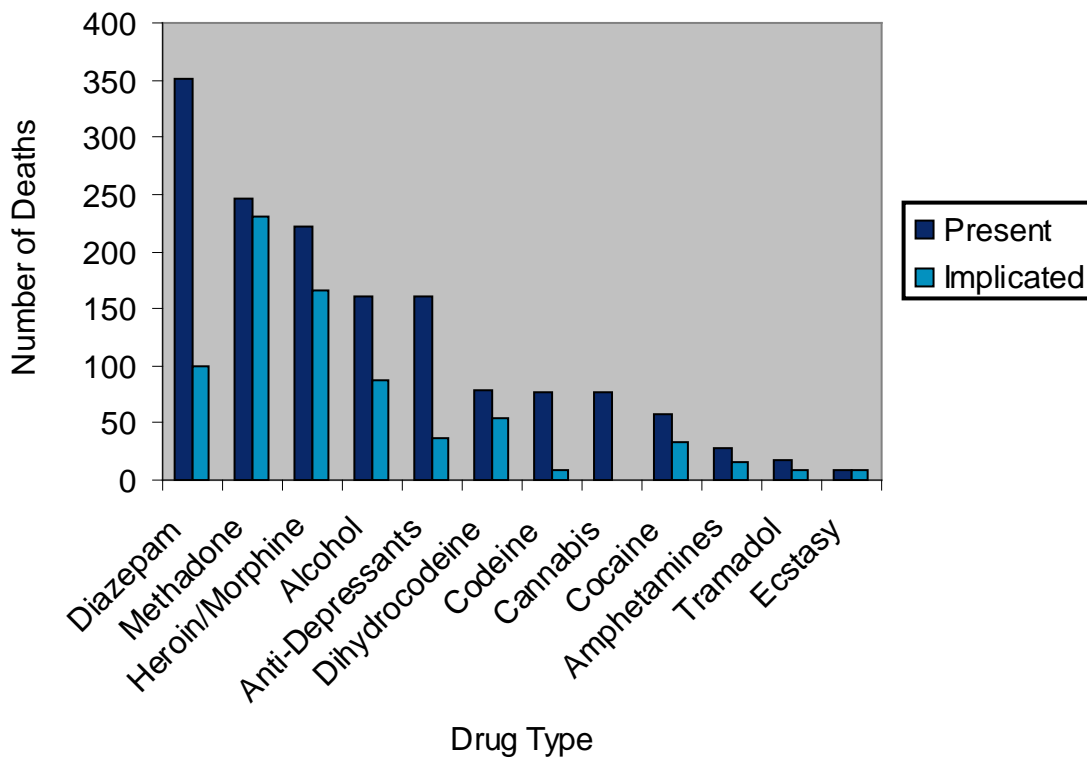
For this report, it has been possible to incorporate toxicology information supplied by NRS for the whole NDRDD cohort of 438 cases. The main difference between the NDRDD and NRS toxicology data is that the NDRDD data provide information about the drugs *present* in the body at post mortem whereas the NRS data usually provide separate information about the drugs present in toxicology which are (i) *implicated* in the death and (ii) *not* implicated in the death. The *presence* of a drug (NDRDD data) does not necessarily mean that the drug contributed to the death. However the NRS data make it possible to examine the proportion of cases where a drug was present and also whether or not it was implicated in the death. It is important to note that the decision as to whether or not a drug is implicated in a death lies with the pathologist and that pathologists provide NRS with information about most drug-related deaths. If NRS does not receive information from a pathologist it assumes that all drugs that were mentioned on the death certificate were implicated in the death.

[Table 33](#) contains details of the number of cases that had specific drugs present and implicated in the death. Methadone was the drug most frequently implicated in the death (234, 53.4%), followed by heroin/morphine (169, 38.6%), diazepam (101, 23.1%), alcohol (93, 21.2%), dihydrocodeine (55, 12.6%), anti-depressants (39, 8.9%), cocaine (33, 7.5%), amphetamines (16, 3.7%), tramadol (9, 2.1%), ecstasy (9, 2.1%) and codeine (8, 1.8%). Cannabis was not implicated in any of the deaths.

In the 2011 NDRDD cohort, there were 7 cases for which toxicology data were not reported, however these 7 cases were included in the NRS 2011 data. In order to calculate drugs implicated as a proportion of drugs present, the data for these 7 cases were removed from the NRS 2011 dataset. This resulted in toxicology data for drugs present and drugs implicated being available for 431 individuals ([Table 34](#) and Figure 5).

Ecstasy was implicated in all 9 cases where it was found to be present. Where methadone was present, it was implicated in 93.1% of the deaths (230/247). This was followed by heroin/morphine which was implicated in 74.8% of the deaths where it was present (166/222). Where dihydrocodeine was present, it was implicated in 70.5% of deaths (55/78). Cocaine was implicated in 57.9% of cases where it was present (33/57) and where amphetamines were present, they were implicated in 57.1% of deaths (16/28). Alcohol was implicated in 55% of the deaths where it was present (88/160). Tramadol was implicated in 50% of the cases where it was present (9/18). Where diazepam was present, it was implicated in 28.2% of the deaths (99/351). Anti-depressants were implicated in 22.5% of cases where they were present (36/160) and where codeine was present, it was implicated in 10.4% of deaths (8/77).

Figure 5. NDRDD Reported Drugs Present and Drugs Implicated, 2011



3.7.3 Drug Deaths by Combination of Drug Types Found, Gender and Age Group

The vast majority of the 2011 cohort (97%) were using multiple drugs at time of death as they had more than one drug present in their toxicology (data not shown in the tables). This figure is comparable to 2010 where 97.8% of the cohort had more than one drug present in their toxicology. In addition, opioids (methadone, heroin, morphine or buprenorphine) were present in 382 cases (87.2%). Key combinations of drugs found in

toxicology were examined in relation to gender and age group ([Table 35](#)). Methadone-diazepam was the most common combination found at post mortem (211, 49%). This was an increase from 2010 (37.1%) when this combination was the third most common. A higher proportion of females (59.6%) than males (46%) had methadone-diazepam present which is a similar pattern to 2010 (42.1% and 35.8% for females and males respectively).

The second most common drug combination in 2011 was heroin-diazepam (194, 45%). This was slightly lower compared to 2010 (49.9%). A higher proportion of males (46%) than females (41.5%) had this combination present. This is the opposite pattern from that found in 2010 when more females (52.6%) than males (49.1%) had both of these drugs present.

Diazepam-alcohol was the next most commonly present drug combination in 2011 (127, 29.5%) which was lower than 2010 (38.2%). Slightly more males (30.6%) than females (25.5%) had both of these drugs present which again is a similar pattern to 2010 (40% and 31.6% for males and females respectively).

Just over one fifth of the cases had heroin-methadone present (94, 21.8%) which was an increase compared to 2010 (16.6%) whereas the proportion of cases with heroin-alcohol present decreased from 32.7% in 2010 to 20.6% in 2011. Methadone-alcohol was present in 18.8% of cases in 2011 which is similar to 2010 (19.7%).

In general there was little difference in proportions of the combinations of drug types by age group.

3.7.4 Substitute Prescribing by Drug Prescribed and Supervision

Information concerning whether or not the deceased had been in receipt of a prescribed substitute drug prior to death was available for 431 cases (98.4%) ([Table 36](#)). Of these, 318 (73.8%) had not been prescribed a substitute drug whereas just over a quarter (113, 26.2%) had been. This is comparable with the proportion of those on a substitute drug in 2010 (24.4%). Of those who were in receipt of a substitute drug, the majority (102, 90.3%) were prescribed methadone. This figure is higher than in 2010 (83.1%). The remainder were prescribed dihydrocodeine (6, 5.3%), suboxone (3, 2.7%) or buprenorphine (2, 1.8%). In 2010, the equivalent percentages were 6.7% dihydrocodeine and 10.1% buprenorphine/suboxone.

Whether the substitute drug was taken under supervision or not was known for 110 cases (97.3%) ([Table 37](#)). Of these, three quarters were supervised (83, 75.5%) while one quarter were not (27, 24.5%). This is similar to 2010 where 76.2% were supervised. For those who were in receipt of a methadone prescription, information concerning whether the methadone consumption was supervised or not was available for 100 cases (98%) ([Table 38](#)). Of these cases, 80 (80%) were supervised consumption and 20 (20%) were not. Regarding the other substitute drugs, none of the 5 individuals in receipt of dihydrocodeine (information for 1 case was missing) and neither of the 2 individuals in receipt of buprenorphine were supervised. All 3 individuals in receipt of suboxone, however, were supervised. This is the first time in the NDRDD reports that dispensing information in relation to specific substitute drugs has been reported.

3.7.5 Drug Type found in Toxicology by Substitute Prescription

Of the 113 cases that had been in receipt of a prescribed substitute drug, toxicology information was available for 111 (98.2%) of these. Of the 318 cases where it was known that the deceased was not in receipt of a substitute drug prior to death, toxicology data was available for 314 of these (98.7%) ([Table 39](#)).

Ninety-one percent (101/111) of those who were receiving a substitute prescription (97 methadone prescriptions, 2 dihydrocodeine prescriptions, 1 buprenorphine prescription and 1 suboxone prescription) had methadone present in their body at post mortem compared to 46.5% (146/314) of those who were not receiving a substitute prescription. The proportion of those on a substitute prescription with methadone present was higher in 2011 (91%) than it was in 2010 (86.4%).

Eighty-seven percent (96/111) of those who were receiving a substitute prescription had diazepam present compared to 81.2% (255/314) who were not receiving a substitute prescription. The proportion of those on a substitute prescription with diazepam present was similar in 2011 (86.5%) compared to 2010 (84.1%).

Fifty-three percent (59/111) of those in receipt of a substitute prescription had anti-depressants present at post mortem compared to 32.2% (101/314) who were not receiving a substitute prescription. The proportion of those on a substitute prescription with anti-depressants present was higher in 2011 (53.2%) than it was in 2010 (39.8%).

Forty-four percent (49/111) of those in receipt of a substitute prescription had heroin/morphine present in their body at post mortem compared to 55.1% (173/314) of those who were not in receipt of a substitute prescription. The proportion of those on a substitute prescription and with heroin/morphine present was lower in 2011 (44.1%) than it was in 2010 (50%).

Thirty-four percent (38/111) of those receiving a substitute prescription had alcohol present at post mortem compared to 38.9% (122/314) who were not receiving a substitute prescription. The proportion of those on a substitute prescription with alcohol present was lower in 2011 (34.2%) than it was in 2010 (38.6%).

Fifteen percent (17/111) of those receiving a substitute prescription had cocaine present in their body at post mortem compared to 12.7% (40/314) of those who were not receiving a substitute prescription. The proportion of those on a substitute prescription who had cocaine present was higher in 2011 (15.3%) than in 2010 (5.7%).

Fourteen percent (15/111) of those receiving a substitute prescription had dihydrocodeine in their body at post mortem compared to 20.1% (63/314) of those not on a substitute prescription. The proportion of those on a substitute prescription who had dihydrocodeine present was similar in 2011 (13.5%) than in 2010 (12.5%).

Fourteen percent (15/111) of those receiving a substitute prescription had codeine in their toxicology compared to 19.7% (62/314) of those not in receipt of a substitute prescription. The proportion of those on a substitute prescription who had codeine present was similar in 2011 (13.5%) to 2010 (12.5%).

Fourteen percent (15/111) of those in receipt of a substitute prescription had cannabis present in their body compared to 19.4% (61/314) of those not on a substitute prescription.

The proportion of those on a substitute prescription who had cannabis present was higher in 2011 (13.5%) than in 2010 (4.5%).

For 81 individuals who were not in receipt of a substitute prescription but who were found to have a substitute drug (methadone or dihydrocodeine) present in their toxicology, the source of the drug was reported (data not reported in the tables). Of these 81 cases, 10 individuals (12.3%) were known to have consumed a substitute drug that was prescribed to a third party such as a partner, family member or cohabiter while 71 (87.7%) were simply reported to have obtained the substitute drug illegally.

3.8 Methadone Related Deaths

The proportion of cases with methadone found in toxicology at post mortem has increased from 39.3% in 2009, to 44.9% in 2010, to 57.3% in 2011 (Table 31). Therefore it is important to consider, in more detail, the role of methadone in drug-related deaths. The following findings have not been reported in previous NDRDD reports as this is the first time that NRS “drugs implicated” data have been incorporated. Comparisons with 2010 are therefore not possible.

3.8.1 Methadone Implicated by Gender and Age Group

Of the 247 deaths where methadone was found in toxicology, 234 cases were identified using NRS data as having methadone implicated in the death. Of these, 172 (73.5%) were male and 62 (26.5%) were female (Table 40). Although the number of methadone implicated deaths was lower for females than for males, methadone was implicated in the death in a higher proportion of female cases. There were 62 of the 95 females (65.3%) in the cohort who had methadone implicated in the death compared to 172 of the 343 males (50.1%). The largest proportion of methadone-implicated deaths were amongst those aged 35-44 years (99, 42.3%) followed by 25-34 years (79, 33.8%), under 25 years (27, 11.5%), 45-54 years (23, 9.8%) and over 54 years (6, 2.6%).

3.8.2 Methadone Implicated and Prescribed Substitute Drug

Of the 234 cases where methadone was implicated in the death, information concerning prescribed substitute drug use was missing for 6 cases and of the 204 cases where methadone was not implicated in the death, information concerning prescribed substitute drug use was missing for 1 case.

Of the 228 methadone-implicated cases with substitute drug information, 92 (40.4%) were in receipt of a substitute drug while 136 (59.6%) were not (Table 41). Of the 92 who were in receipt of a substitute drug, 88 were in receipt of methadone. Of the 203 cases where methadone was not implicated in the death and where substitute drug information was available, 21 (10.3%) were in receipt of a substitute drug and of these, 14 were in receipt of methadone. Taken together, 38.6% (88/228) of the cases where methadone was implicated in the death (with substitute drug information available) were in receipt of a methadone prescription prior to death whereas 6.9% (14/203) of cases where methadone was not implicated in the death (with substitute drug information available) were in receipt of a methadone prescription prior to death.

Of the 102 individuals in the cohort who were in receipt of a methadone prescription, 86.3% (88/102) of these had methadone implicated in their death and 13.7% (14/102) did not have methadone implicated in their death.

3.8.3 Methadone Implicated and Dispensing of Prescribed Methadone

Information concerning how the prescribed methadone was dispensed was available for 100 cases ([Table 42](#)). Of these 100 cases, methadone was implicated in the death for 86 of these. Of these 86 cases, 69 (80.2%) had been receiving their methadone prescription through supervised dispensing while 17 (19.8%) had been unsupervised. This can be compared to 14 cases with methadone dispensing information available and where methadone was not implicated in the death. Of these 14 cases, 11 (78.6%) were supervised and 3 (21.4%) were unsupervised.

3.8.4 Methadone Implicated and Dose of Prescribed Methadone

Information about the daily prescribed dose of methadone was available for 101 of the 102 individuals (99%) receiving a methadone prescription ([Table 43](#)). Of these individuals, 12 (11.9%) were on a daily prescribed dose of 0-30mg, 31 (30.7%) were on 31-60mg, 33 (32.7%) were on 61-90mg, 16 (15.8%) were on 91-120mg and 9 (8.9%) were on a dose higher than 120mg.

[Table 44](#) shows the proportions of those on a methadone prescription by prescribed daily dosage and whether or not methadone was implicated in the death. It was known for 87 cases that methadone was implicated in their death and that they had been prescribed a certain daily dose of methadone prior to their death. Of these, 10 (11.5%) were prescribed 0-30mg per day, 27 (31%) were prescribed 31-60mg per day, 28 (32.2%) were prescribed 61-90mg per day, 16 (18.4%) were prescribed 91-120mg per day and 6 (6.9%) were prescribed over 120mg per day.

3.8.5 Methadone Implicated and Length of Time in Receipt of Prescribed Methadone

It was known in 99 cases the length of time the individuals had been in receipt of a methadone prescription prior to death ([Table 45](#)). The majority (76, 76.8%) had been in receipt of prescribed methadone for over 1 year while 23 (23.3%) had started their prescription in the year before they died.

Of the 23 who had been in receipt of prescribed methadone for 1 year or less, 20 (87%) were found to have had methadone implicated in their death, ([Table 46](#)).

4. Discussion

This is the third report from the National Drug Related Deaths Database (NDRDD) and describes the characteristics and circumstances surrounding 438 individuals who died a drug-related death in Scotland in 2011. The 2011 findings have been compared with the 2010 findings throughout Section 3. Furthermore, in the 2011 NDRDD report tables, additional tables have been included for 2009 and 2010 to allow for comparisons across the three years of reporting. This section will highlight some of the main findings and draw attention to the wider literature to provide context. It should be noted that the percentages presented here are not necessarily for the total cohort of 438 individuals but based on the number of individuals where the information was known.

4.1 Socio-Demographics and IV Drug Use

Over three quarters of the total NDRDD 2011 cohort were male and this pattern, which has been constant since 2009, appears to be consistent with the overall gender pattern of problematic drug use in Scotland [4]. Similarly, the finding that just over half of the cohort, where known, lived in the most deprived areas of Scotland (as measured by the Scottish Index of Multiple Deprivation) is indicative of a constant pattern and supports the association between income inequality and health inequalities [5].

Dundee City, Inverclyde and the City of Glasgow were the council areas with the highest crude mortality rates and this appears to reflect the council areas in Scotland with the highest prevalence of problematic drug use [6].

Approximately 60% of individuals lived in their own home at the time of death and this has been a constant pattern since 2009. Whilst the proportion who were reported as homeless (living in a hostel, homeless accommodation or with no fixed abode) in 2011 was relatively small (14.3%), it was higher than in 2010 (10%). Although the link between homelessness and drug use is well-established, researchers have called for further examination of the effects of multiple factors that may increase the risks to this vulnerable population [7].

It is plausible that living alone, whether homeless or not, may increase the risk of drug-related death since it is less likely for someone to be present to intervene or call for assistance in the event of an overdose. However, in saying this, while approximately half of individuals lived alone and died in their own home; there was someone present at the death in 257 cases, an ambulance was called in 376 of cases and resuscitation was attempted in 185 cases. Therefore, there were many opportunities for intervention and it appears these opportunities were often taken. However, many of those who were present when the person died were not in the same room and the length of time between the overdose and life saving measures being employed (attempting resuscitation and calling an ambulance) was unknown. Therefore it may be that the individuals present at the scene were too late in their assistance despite their best efforts. As in previous years, the 2011 data analyses findings highlight the importance of awareness of the symptoms of overdose and potential for life saving interventions to be delivered by those at the scene, the supply of 'take-home' naloxone and provision of associated training being a key aspect of this.

The largest proportion of cases in the NDRDD cohort was aged 35-44 years. When compared with the age distribution of the Scottish general population in 2011, it appears that this age group was over-represented in the cohort. In the 2011 general population, 13.4% were aged 35-44 [8] whereas 38.1% of the 2011 NDRDD cohort was in this age group. Similarly, those aged 25-34 years were over-represented in the cohort with 35.6%

of the 2011 NDRDD cohort in this age group compared with 13% of the 2011 general population [8]. Comparisons cannot be made with the drug using population as these statistics do not contain like-for-like age groupings [6].

Several sources have indicated that the population of problematic drug users and those dying from drug-related deaths is ageing [1, 9-11]. In the examination of age and drug-related deaths, NRS [1] compared drug-related deaths in 1997-2001 and 2007-2011. It was found that the largest increases were for those aged 35-44 and 45-54 years with those aged 55 and over showing a smaller increase. Given that the NDRDD is relatively new and currently spans only three years of data, longer term trends cannot yet be examined. The high proportions of those in the 35-44 age group in 2011 and the small increase in drug-related deaths in those aged over 55 years over the three years (2009-2011) appear, however, to fit with the NRS [1] trends.

Whilst the EMCDDA [12] highlighted older age as a risk factor for drug-related deaths, the influence of other factors (combined with age) need to be considered. For example, a recent study [13] found that older age only increased the risk of a drug-related death for those with a diagnosis of Hepatitis C. Furthermore, the EMCDDA [12] noted that the effect of older age may be due to the cumulative toxicity of drugs over the years and/or increased poor health. Many of the older members of the NDRDD cohort were likely to have experienced the wide availability of heroin in the UK in the 1980s and early 1990s and may have been included in the large numbers of injecting heroin users that emerged during this time [10]. This is supported by the 2011 NDRDD finding that 68 individuals were known to have been intravenous (IV) drug users for 11-19 years prior to death and 27 had been injecting for over 20 years.

The cohort had high levels of medical and psychiatric problems. Notably, the prevalence of problematic alcohol use has decreased over the period 2009-2011 but the prevalence of Hepatitis C has increased. IV drug users were more likely to have medical conditions such as Hepatitis C, liver disease, epilepsy, deep vein thrombosis, Hepatitis B and diabetes than non-IV drug users. Those who were known to have been injecting intravenously for over 11 years were more likely to have these conditions than those who had been injecting for a shorter period of time. These findings should be viewed tentatively as they were based on small numbers. However, they suggest that there may be combined effects of older age, long-term IV drug use and medical conditions which may all add to the risk of dying from a drug-related death.

Another notable finding from this report relates to those who died who were parents/parental figures. Where known, 189 individuals had been a parent/parental figure, 41 of whom were living with a child at the time of their death. In total 331 children lost a parent/parental figure, 67 of whom had been living with the parent/parental figure at the time of their death. These figures are all higher compared with 2010 which is likely to be a reflection of the higher number of individuals in the 2011 cohort. The figures not only highlight the parental responsibilities of those in the cohort but also the discrepancy between those with children and those who were actually living with children. In their "Hidden Harm" publication [14], the then Scottish Executive outlined the harms caused to children of living with a parent with problematic drug use. Since this document is aimed at identifying and supporting children living with substance using parents, it does not directly address the consequences of a parent dying, and this may be an area for further consideration.

4.2 Contact with Services

As was the case in 2010, the majority (64.5%) of individuals were known to drug treatment services. This year, information concerning imprisonment and recent release from police custody are reported. It is well evidenced that the period immediately following release from prison (particularly in the first two weeks post-release) is a time of heightened risk for drug-related deaths amongst drug users [15-16]. Imprisonment can result in reduced drug tolerance as it is a period of enforced abstinence which in turn increases the risk of overdose for individuals who return to drug use after their release [16]. In the 2011 NDRDD cohort, 78 individuals had been released from prison in the 6 months prior to death with 19 of these being released in the week prior to death. Prison settings therefore provide an opportunity to detect and respond to individuals who are thought to be at risk of dying from a drug-related death shortly after their release. This opportunity is already being utilised through the provision of “take-home” naloxone kits for prisoners on their release. This programme was introduced in February 2011 and taken up by all Scottish prisons by June 2011 [17]. The responsibility and accountability for the provision of health care services to prisoners transferred from the SPS to the National Health Service on 1 November 2011. These services are now provided within Scottish Prisons by respective local Health Boards.

The NDRDD also collects data concerning whether or not members of the cohort had been in police custody prior to death and how long they had been released from custody before they died. It was found that 167 individuals had been released from police custody in the 6 months prior to death and 25 individuals had been released in the week prior to death. The nature of the link between release from police custody and drug-related deaths, however, is unclear as there is a lack of academic literature in this area. This appears to be an area that requires further exploration and research as police custody could present an additional opportunity for intervention.

4.3 Toxicology and Substitute Prescribing

For the first time, data supplied by the NRS regarding the drugs that were implicated in the deaths were incorporated into the NDRDD dataset. Therefore the drugs present in the body (NDRDD 2011 data) could be compared with the drugs implicated in the death (NRS 2011 data).

The proportion of deaths with heroin/morphine present has fallen over the period 2009-2011 while, at the same time, the proportion of deaths with methadone present has risen. The proportion of deaths with diazepam present has also shown a small increase over this time.

The number of methadone prescriptions in Scotland rose from 117 per 1000 of the population aged 15+ in 2009/10 to 122 prescriptions per 1000 of the population aged 15+ in 2010/11 [4]. Against this background of increasing methadone prescribing in Scotland, we would expect a decrease in the recipients' heroin use and so might expect an increasing proportion of cases where methadone is present in toxicology. In the NDRDD 2011 cohort, 102 individuals were known to have been in receipt of a methadone prescription when they died, whereas there were a total of 247 cases with methadone present in the toxicology (and 234 cases with methadone implicated in the death). Of the 102 individuals known to have been in receipt of a methadone prescription when they died, 97 had methadone present in the toxicology, and for 88 of these, methadone was implicated in their death. These figures lead to two conclusions: (1) nearly everyone, but not all, on the 2011 NDRDD cohort who was in receipt of a methadone prescription had methadone in their toxicology

and the majority of these also had methadone implicated in their death; (2) the majority of individuals (150, 60.7%) in the 2011 NDRDD cohort with methadone found in toxicology were not in receipt of a methadone prescription and the majority of individuals, where known, (136, 59.6%) with methadone implicated in the death were not in receipt of a methadone prescription.

The first of these conclusions indicates that the majority of those receiving a methadone prescription at the time of their death had consumed methadone in close proximity to their death. It should be noted that, where known, 80.2% of those with methadone implicated in their death and who were in receipt of a methadone prescription received it through supervised dispensing. The level of methadone in their bodies, however, was unknown and therefore it is not possible to deduce whether or not these individuals had “topped-up” by consuming diverted methadone in addition to their prescription. What can be seen from the findings however, is that many individuals who were in receipt of a substitute prescription had consumed other drugs in addition to methadone. The second conclusion indicates that the majority of those who died with methadone present in their body had consumed diverted rather than prescribed methadone. Data for 81 of these individuals support this, as it was reported that they had obtained their substitute drug either illicitly (e.g. purchased it from a dealer) or from a third party (e.g. partner or relative) who was in receipt of a prescription. Whilst these data did not differentiate between specific substitute drugs, it is likely that a high proportion of these cases relate to methadone.

One explanation for the decrease in heroin/morphine and increase in methadone in Scottish drug-related deaths is that in 2010 and 2011, the purity of the heroin available in the UK was unusually low and there was a heroin drought in some areas of the UK including Scotland [18-19]. It is plausible that when heroin is in short supply and the supply is of low purity, individuals will seek heroin-alternatives such as methadone. In an alert to services, the Scottish Drugs Forum [20] highlighted that a heroin drought could also increase polydrug use particularly the use of combinations of benzodiazepines, alcohol and methadone. This is supported by the NDRDD toxicology findings that relate to combinations of drugs. The vast majority of the cohort (97%) were found to have more than one drug present in their toxicology, similar to 2010 (97.8%). When looking at specific drug combinations across 2009-2011, drug combinations involving methadone (heroin-methadone, methadone-diazepam, methadone-diazepam-alcohol) were higher in 2011 than the previous two years. The only exception was methadone-alcohol which was slightly higher for males but lower for females. In contrast, drug combinations including heroin (with the exception of heroin-methadone) were all lower in 2011 than the previous two years.

In relation to mortality and morbidity, methadone is regarded as a safer drug than heroin [21] and therefore the finding that the proportion of deaths with methadone implicated was higher than the proportion of deaths with heroin/morphine implicated is possibly explained by the effects of polydrug use as mentioned above. Likewise, the high number of methadone-implicated deaths could be related to the specific dose of prescribed methadone. A dose that is too high can lead to an overdose, however a dose that is too low can lead to withdrawal which can lead to individuals “topping up” with other drugs such as illicit opiates and benzodiazepines [22]. Similarly there is evidence to suggest that individuals who wish to begin a methadone prescription but who have been unsuccessful in their efforts to achieve this are at a risk of overdose [23]. Therefore further investigation concerning the role of dose and not being on a methadone prescription in methadone-implicated deaths is required.

As noted earlier in this report, naloxone is an opioid antagonist which can temporarily reverse the effects of an opioid overdose ('opioids' are: methadone, heroin, morphine and/or buprenorphine). The aim of the National Naloxone Programme is to contribute to a reduction in fatal opioid overdoses in Scotland through the supply of 'take-home' naloxone kits to individuals in the community at risk of opioid overdose as well as supply to prisoners on release from prison. The offer of 'take-home' naloxone to all individuals in receipt of opiate substitution therapy may present as an opportunity to increase the supply of 'take-home' naloxone across Scotland.

Finally, it is worth noting the changing patterns of alcohol and anti-depressants present in toxicology over the period 2009-2011. While both of these drugs were present in relatively high numbers of drug-related deaths, the presence of alcohol decreased over this period whereas the presence of anti-depressants increased. Given that diazepam, methadone, heroin/morphine and alcohol are mood-depressants, the rise in the presence of anti-depressants in toxicology may indicate attempts by individuals to elevate their mood while continuing to take these other substances and/or may be indicative of increasing mental health co-morbidities. The role of anti-depressants in drug-related deaths warrants further investigation, particularly amongst females who were more likely than males to have these drugs present in their toxicology.

4.4 Limitations and Future Considerations

The NDRDD consists of a rich dataset which contextualises the circumstances surrounding many of those who have died from a drug-related death in Scotland in a given calendar year. It highlights the complexities and heterogeneities amongst this population while at the same time it facilitates the detection of patterns. These patterns can aid in the identification of individuals who may be particularly vulnerable to drug-related death which can lead to the implementation of prevention measures. As with all research, however, the NDRDD has its limitations.

Perhaps the greatest limitation is that there is no control group i.e. given that everyone in the cohort has died, it is not possible to test hypotheses regarding factors that add to the risk of dying from a drug-related death. Therefore, the findings from this report can lend weight to existing research concerning risk factors but it cannot substantiate them through more advanced statistical tests.

Another limitation is that there were 106 individuals who were known to have met the NDRDD inclusion criteria but were not included because records were not returned to ISD (see [Appendix A5](#)). Continuous efforts are being made to reduce this number of cases for future datasets.

Finally, whilst the NDRDD collects information about numerous aspects relating to the deaths, there are some items that are not included in data collection. For example, research has found that recent release from hospital can increase the vulnerability of overdose [24] but such information is not collected. Similarly, given the high presence of diazepam in the deaths, it would be useful to have information concerning whether or not the individuals had been prescribed this drug.

Areas for further consideration have been highlighted throughout this discussion. Possible questions to be addressed by the NDRDD in the future include the following.

- What role does recent release from police custody play in drug-related deaths?

- What is the relationship between methadone and heroin/morphine in drug-related deaths?
- What is the proportion of individuals who died a methadone related death and were not in receipt of a methadone prescription but had previously expressed their desire for a substitute prescription?
- What is the role of prescribed/diverted diazepam in drug-related deaths?
- What is the role of prescribed/diverted anti-depressants in drug-related deaths?

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Glossary

ACMD:	Advisory Council on the Misuse of Drugs
ACPOS:	Association of Chief Police Officers, Scotland
DRD:	Drug-Related Death
EMCDDA:	European Monitoring Centre for Drugs and Drug Addiction
ICD:	International Classification of Diseases
ISD:	Information Services Division
NDRDD:	National Drug-related Deaths Database
NRS:	National Records of Scotland
SCDEA:	Scottish Crime and Drug Enforcement Agency
SIMD:	Scottish Index of Multiple Deprivation
SPS:	Scottish Prison Service

List of Tables

Table Number	Name	File & Size
ALL	Full worksheet containing all 46 tables	Excel [90kb]
1	Numbers and crude mortality rates by council area of death	Excel [20kb]
2	Crude mortality rate by NHS Board of residence	Excel [20kb]
3	Age and gender	Excel [20kb]
4	SIMD quintile areas of deprivation	Excel [20kb]
5	Where the deceased was living at the time of death	Excel [20kb]
6	Whom the deceased was living with at the time of death	Excel [20kb]
7	Children under 16 years the deceased was a parent or parental figure to and children under 16 years who lived with the deceased	Excel [20kb]
8	Known drug use prior to death?	Excel [20kb]
9	Known intravenous (IV) drug use and length of IV drug use	Excel [20kb]
10	Drug detoxification within the 12 months prior to death and the length of time prior to death since last drug detoxification	Excel [20kb]
11	Overdoses experienced prior to death	Excel [20kb]
12	Number of months since last known non-fatal overdose	Excel [20kb]
13	Experienced a particular medical condition in the 6 months prior to death?	Excel [20kb]
14	Experienced a particular psychiatric condition in the 6 months prior to death?	Excel [20kb]
15	Experienced a significant event in the 6 months prior to death?	Excel [20kb]
16	Number of deaths by place of drug use	Excel [20kb]
17	Where the individual was pronounced dead	Excel [20kb]
18	Deaths by day of occurrence	Excel [20kb]
19	Persons present at scene of fatal overdose and their location	Excel [20kb]
20	Ambulance attending the scene of fatal overdose?	Excel [20kb]
21	Resuscitation attempted?	Excel [20kb]
22	Resuscitation attempted by whom?	Excel [20kb]
23	Naloxone availability and administration	Excel [20kb]
24	Contact with drug treatment services at any time prior to death	Excel [20kb]
25	Number of weeks since last contact with drug treatment services prior to death	Excel [20kb]
26	Type of services people were in contact with prior to death	Excel [20kb]
27	Been in police custody prior to death?	Excel [20kb]
28	Number of weeks between police custody release and death	Excel [20kb]
29	Ever served time in prison?	Excel [20kb]
30	Number of weeks between prison release and death	Excel [20kb]
31	Drugs found in toxicology for all deaths by age and gender	Excel [20kb]
32	% drugs found in toxicology for all deaths by gender	Excel [20kb]
33	Drugs present and drugs implicated in the deaths	Excel [20kb]
34	Drugs implicated as a percentage of drugs present in the deaths	Excel [20kb]
35	Combination of drugs found in toxicology for all deaths by age and gender	Excel [20kb]
36	Prescribed a substitute drug at time of death?	Excel [20kb]
37	Dispensing of prescribed substitute drug	Excel [20kb]
38	How prescribed substitute drug was dispensed by type of substitute drug	Excel [20kb]
39	Prescribed a substitute drug at time of death by drug reported in	Excel [20kb]

	toxicology	
40	Methadone implicated deaths by age and gender	Excel [20kb]
41	Methadone implicated deaths and prescribed substitute drug	Excel [20kb]
42	Methadone implicated deaths and dispensing of prescribed methadone	Excel [20kb]
43	Dose of prescribed methadone	Excel [20kb]
44	Dose of prescribed methadone and methadone implicated	Excel [20kb]
45	Length of time in receipt of a methadone prescription	Excel [20kb]
46	Methadone implicated deaths and length of time in receipt of methadone prescription	Excel [20kb]

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Appendices

A1 – National Records of Scotland Definition of a Drug-Related Death

The following is an extract taken from the National Records of Scotland, Drug-Related Deaths in Scotland 2011 report [1].

- A1. The definition of a 'drug-related death' is not straightforward. Useful discussions on definitional problems may be found in articles in the Office for National Statistics publication 'Population Trends' and in the journal 'Drugs and Alcohol Today' (please go to References in Annex C). A report by the Advisory Council on the Misuse of Drugs (ACMD) – (mentioned in the References), 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'. National Records of Scotland (NRS), formerly General Register Office for Scotland (GROS), was represented on this group, and this publication presents information on drug-related deaths using the approach that was agreed, on the basis of the definition as it was implemented by GROS and, now, NRS.
- A2. The 'baseline' definition for the UK Drugs Strategy covers the following cause of death categories (the relevant codes from the International Statistical Classification of Diseases and Related Health Problems, 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).

Note:

If a drug's legal status changes, NRS aims to count it on the basis of its classification on the day the person died (as they do not know when the drug was taken). For example,

mephedrone was banned under the Misuse of Drugs Act with effect from 00.01 on 16 April 2010. Therefore, if mephedrone was the only drug found to be present in the body, a death coded to one of the categories listed under (b) would not be counted in NRS's implementation of the 'baseline' definition if it occurred before 16 April 2010.

A3. A number of categories of what may be regarded as 'drug-related' deaths are excluded from the definition because the underlying cause of death was not coded to one of the ICD10 codes listed above. Examples of deaths which are not counted for this reason are:

- deaths coded to mental and behavioural disorders due to the use of alcohol (ICD10 code: F10), tobacco (F17) and volatile substances (F18);
- deaths from AIDS where the risk factor was believed to be the sharing of needles;
- deaths from drowning, falls, road traffic and other accidents (except the inhalation of gastric contents, or choking on food) which occurred under the influence of drugs; and
- deaths due to assault by a person who was under the influence of drugs, or as a result of being involved in drug-related criminal activities.

Also excluded from the GROS/NRS implementation of the definition are a small proportion of the deaths which were coded to one of the ICD10 codes listed in paragraph A2, specifically:

- deaths coded to drug abuse where the direct cause of death was secondary infections or related complications. These include deaths which were due to clostridium novyi infection that was the result of the injection of contaminated heroin (Annex A of 'Drug-related Deaths in Scotland in 2000' explained that 22 such cases had been identified when the 2000 deaths data file was closed in May 2001, adding that it was not clear whether additional deaths had subsequently been identified). Similarly, these figures exclude the 13 deaths which were caused by the outbreak of anthrax that was associated with contaminated heroin and started in December 2009. Also excluded from the statistics are deaths caused by bronchopneumonia, organ failure and other later complications of drug use, in cases where drug misuse was not the direct and immediate cause of death (even though it may have damaged greatly the person's health). However, it should be noted that deaths for which the cause was given as (e.g.) 'bronchopneumonia, heroin intoxication' are included in these statistics because it is assumed that the medical condition is an immediate consequence of the drug toxicity;
- deaths where a drug listed under the Misuse of Drugs Act was present as part of a compound analgesic or cold remedy. These deaths are excluded in order that deaths from overdoses of legally prescribed non-controlled drugs are not counted as 'drug-related'. Examples of such combinations include:
 - co-proxamol (paracetamol and dextropropoxyphene);
 - co-dydramol (paracetamol and dihydrocodeine); and
 - co-codamol (paracetamol and codeine sulphate).

All three of these compound analgesics, particularly co-proxamol, have commonly been used in suicidal overdoses. As it is believed that dextropropoxyphene has rarely, if ever, been available other than as a constituent of a paracetamol compound, deaths caused by dextropropoxyphene have been excluded even if there is no mention of a compound analgesic or paracetamol. However, deaths for which codeine or dihydrocodeine were reported without any mention of paracetamol have been included, as these drugs are available on their own and are known to be abused in that form.

A4. From time to time, there may be minor discrepancies between the figures for 2006 and earlier years that were published previously and those which are produced now. This is due to a change in the way in which 'drug-related' deaths are identified using the data held by NRS. This process has two stages:

- first, extract all the records of deaths which satisfy the 'wide' definition (Annex B). The method used for this stage has not been changed; and
- second, scrutinise the extracted records and identify the ones which should be counted under NRS's implementation of the 'baseline' definition. The method used for this stage was changed with effect from June 2008.

Previously, the data were examined by the former GROS Vital Events Statistician, who had considerable knowledge and experience of dealing with information about drug-related deaths. He used Excel's facilities to set a number of indicators, and so identified the cases which should be counted under GROS's implementation of the 'baseline' definition. This method clearly relied greatly on the Statistician's personal expertise. He retired in Spring 2008.

Now, most of this work is done by SAS computer programs, using a look-up table to identify particular types of drugs (John Corkery of the National Programme on Substance Abuse Deaths supplied most of the content of the look-up table).

The new method was tested by using it to prepare figures for each year for 2000 to 2006, inclusive. The results were the same as, or within just 1-2 of, the figures which had been published previously. After examining the cases which were being counted differently by the old and the new methods, it was concluded that any flaws in the new method were not significant, and that it should be used henceforth. However, to avoid confusing users of these statistics, the tables which appeared in editions of this publication which were produced before the method was changed give figures for 2006 and earlier years which were extracted from the database produced by the old method, and so are as published previously. However, any subsequent new analyses of the data for 2000 onwards are likely to use the database produced by the new method, and so may include some totals or sub-totals (for the years from 2000 to 2006, inclusive) that differ slightly from the figures which were published previously, because the new method was used to produce the database of relevant cases for those years.

A2 – Establishment of the National Forum on Drug-Related Deaths (NFDRD)

The following extract is taken from Section 2.2 of the National Drug-Related Deaths (Scotland) 2009 report which was published in December 2010 [3] and explains the origins of the NFDRD Data Collection Sub-Group. Please note that the references indicated in square brackets in this extract correspond with the references found in Section 5 of the 2009 report [3].

2.2 Background, Policy Context and Rationale

Following the rise in drug-related deaths in the early 2000s, the then Scottish Executive set up a National Investigation into drug-related deaths [2]. Reporting in 2005, this examined the clinical and social circumstances surrounding all drug-related deaths in Scotland for the calendar year 2003. The Scottish Advisory Committee on Drug Misuse (SACDM) convened a short life working group in 2005 to develop a policy response to the findings and proposals from both the National Investigation and the Association of Drug and Alcohol Teams report on Drug-Related Deaths published earlier that year [3, 4]. Key recommendations from both reports with regard to future monitoring of drug-related deaths included the need to improve record keeping of both clinical details and social circumstances of service users; the need for standardisation of the definition and reporting of a drug-related death (including a standard approach by pathologists); that local areas establish drug-related deaths databases to be overseen by Critical Incident Groups; the need to develop a comprehensive minimum dataset for reporting of deaths and the proposal of the establishment of a national confidential enquiry. The then Scottish Executive responded to these recommendations in the plan Taking Action to Reduce Scotland's Drug-Related Deaths Dec 2005, a principle action of which was to set up a National Forum on Drug-Related Deaths (NFDRD) to study trends of drug-related deaths and disseminate good practice [5].

In its first annual report in 2007, the National Forum on Drug-Related Deaths proposed that a new system for data collection on drug-related deaths should be established [6]. Local Alcohol and Drug Action Teams (ADATs) should be 'asked to gather data in a systematic format on each death after being notified of these by the police or the SCDEA (Scottish Crime and Drug Enforcement Agency)' and that 'the data should be standardized by ISD (Information Services Division) in a suitable electronic format which will allow analysis and reporting'. In 2008 the Scottish Government published the national strategy for tackling drug misuse, the Road to Recovery, in which it outlined the commitment to work with ISD to create a Drug-Related Deaths Database 'to give a more complete picture of a person's treatment pathway prior to death' [7]. The development of the NDRD Database and collection of NDRDD data was led by ISD working in close collaboration with the Alcohol and Drug Partnerships (which replaced Drug and Alcohol Teams) and local DRD monitoring groups under the auspices of the National Forum on Drug-Related Deaths through its Data Collection Sub-Group.

A3 – National Forum on Drug-Related Deaths Data Collection Sub-Group Membership

Name	Title/Organisation
Dr Roy Robertson (Chair)	Reader, Centre for Population Health Sciences, University of Edinburgh and Muirhouse Medical Group, Edinburgh
Gordon Bruce	NHS Services Scotland – Information Services Division
Dr Malcolm Bruce	Consultant Psychiatrist in Addiction, NHS Lothian.
Linsey Galbraith	Information Services Division, NHS
Robin Lawrenson	Clinical Performance Manager, NHS
Dr Claire McIntosh	East Central Scotland MCN Drug Death Group
Jim Sherval	Specialist in Public Health, NHS Lothian
Tony Martin	Research Associate, University of Glasgow and NHS Greater Glasgow & Clyde Data Collection Co-ordinator

Scottish Government Official Support and Secretariat

Fiona Fraser, Scottish Government, Justice Analytical Services

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A4 – National Drug-Related Deaths Data Collection Co-ordinators

Health Board Area	Data Collection Co-ordinator(s)	Organisation	Email	Other Data Collectors
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Grampian	Lynn Sutherland	Grampian Public Health	lynnsutherland@nhs.net	Maria Rossi & Jean Adams
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Lothian	Jim Sherval	Lothian Public Health	jim.sherval@nhs.net	Peter Fairbrother
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Argyll & Bute ²	Sarah Marquis	Argyll & Bute ADP	s.marquis@nhs.net	Yennie Van Oostende
Western Isles (Eilean Siar)	Tom Ogilvie	Northern Constabulary, HQ Policy & Co-ordination Unit	tom.ogilvie@northern.pnn.police.uk	

¹ ADP stands for Alcohol and Drug Partnerships Support Team

² Part of Argyll and Bute belongs to Highland Health Board with the other part belonging to Greater Glasgow and Clyde Health Board. However Argyll and Bute is treated as a separate entity as far as the NDRD data collection is concerned.

A5 – Construction of the 2011 NDRDD Cohort

1. Drug-Related Deaths for 2011 Reported by Different Agencies

NDRDD	NRS	SCDEA
438	584	488

The National Drug Related Deaths Database (NDRDD) figure of 438 drug-related deaths in 2011 is not a National Statistics output for Scotland but represents a subset of those deaths on which detailed information was collected.

The National Statistics output for the number of drug-related deaths that are registered annually in Scotland is published by the National Records of Scotland (NRS) in its annual Drug-Related Deaths report [1]. The NRS figure for 2011 is 584.

The Scottish Crime and Drug Enforcement Agency (SCDEA) also produce an annual figure for the number of deaths that are reported to them by Scottish police forces (via the Association of Chief Police Officers, Scotland (ACPOS)) that are drug-related. Whilst ACPOS report on all suspected drug-related deaths, some of these are later excluded following post mortem examination and toxicology testing. At the time of writing, of the 488 deaths reported by the SCDEA in 2011, 280 were confirmed as drug-related while 208 were suspected. It is possible that a proportion of the 208 suspected deaths are now confirmed or rejected as being drug-related.

2. Matching the NDRDD Records to NRD Death Records

In line with the previous two NDRDD reports [2-3], the data were quality assured by matching the NDRDD death records to those held by NRS. The NRS thoroughly reviews the death certificates for all deaths occurring in a given calendar year before determining whether or not they are drug-related. The 2011 NRS figure of 584 was therefore derived from this comprehensive process.

A total of 496 records were returned to ISD for inclusion in the NDRDD for 2011 and these were matched to the NRS records for every death registered in Scotland in 2011 (including the 584 drug-related deaths). 58 (out of 496) of the NDRDD records did not meet the NDRDD definition of a drug-related death. Therefore the final 2011 NDRDD cohort (analysed for this report) comprised of 438 records. The reasons for the removal of the 58 records are shown in the following table.

	Number of cases excluded
NRS coded the death (ICD 10 codes) to something unrelated to the use of a controlled substance e.g. chronic ischaemic heart disease (ICD10 code I25), status asthmaticus (J46), other chronic obstructive pulmonary disease (J44)	15
NRS coded the death to 'other ill-defined and unspecified causes of mortality' (R99) and no additional toxicology and cause of death information was made available before NRS finalised its statistical database for deaths registered in 2011.	32
NRS coded the death to 'intentional self-poisoning by drugs, medicaments and biological substances' (X60 – X64) i.e. suicide	11
	58

3. Explanation of the Difference between the NDRDD and NRS Figures

The reasons why the NRS 2011 figure of 584 is much higher than the NDRDD 2011 figure of 438 are shown in the table below.

	Number	Total
The number of drug-related deaths reported by NRS for 2011.	584	
Less the deaths that have been coded by NRS to 'intentional self-poisoning by drugs, medicaments and biological substances' (X60 – X64) i.e. suicides. The NDRDD definition of a DRD excludes suicides.	-36	548
Less the NRS deaths that occurred in 2010 but were registered in 2011 i.e. not included in the 2011 NDRDD figure.	-16	532
Add the NDRDD deaths that occurred in 2011 but were registered in 2012 i.e. not included in the 2011 NRS figure.	+7	539
Add the deaths that were not included in the 2011 NRS figure due to their not being classifiable as 'drug-related' on the basis of the information that was available to NRS when it finalised its statistical database for deaths registered in 2011.	+5	544
Less the deaths that were included in the 2011 NRS figure but for which a NDRDD record was not returned to ISD.	-106	438
Cases in NDRDD cohort to be analysed.	438	

The table above shows that some of the difference between the NRS figure and the NDRDD figure is explained by the fact that 36 of the NRS deaths were coded to 'intentional self-poisoning by drugs, medicaments and biological substances (X60 – X64)' and these suicides have been excluded from the NDRDD figure as the NDRDD definition of a drug-related death excludes suicides. The table above also illustrates that the NDRDD uses the

date of death to allocate the death to a particular year whereas NRS uses the date death registered resulted in a net loss of 9 cases to the NDRDD figure.

A further 5 deaths were included in the final NDRDD figure that were not counted as 2011 DRDs by NRS because this was not appropriate, on the basis of the information that was available to NRS when it finalised its statistical database for deaths registered in 2011 at the end of May 2012. Note – NRA data is “frozen” around May/June of the following calendar year. Taking the above explanations into account there still remains 106 deaths that NRS have counted as DRDs for which ISD did not receive any returns for the NDRD database. These 106 deaths were more or less evenly distributed across all NHS Board areas of Scotland.

4. Reasons Why 106 NRS DRDs Were Not Captured By the NDRDD Data Collection

1. The pathologist (or the Local Critical Incident Monitoring Group informed by the pathologist) decided that the death was a suicide whereas NRS had counted the death as an "event of undetermined intent" because NRS had not been told that the death was believed to be a suicide by the date on which NRS "froze" its statistical data records for 2011 (N.B. A death certificate will not state whether a death was a suicide. NRS relies on Procurators Fiscal to inform it whether a traumatic or suspicious death was believed to be the result of an accident, assault, or intentional self-harm). In this scenario a NDRDD record was not completed and returned to ISD for the death, but the death was probably counted by NRS as an “event of undetermined intent” DRD, or possibly an “accidental” DRD.
2. The pathologist (or the Local Critical Monitoring Group) decided that the Cause of Death was “unascertained” and that the death should therefore not be classed as a drug-related death whereas the information that NRS received had indicated that the death was a drug-related death.
3. The NRS decided that the death was a drug-related death because an illicit drug was present in the toxicology, but the pathologist (or the Local Critical Incident Monitoring Group) considered that:
 - i) either the level of the illicit drug was so small that the death could not be considered as being a drug-related death, or
 - ii) the only illicit drug(s) listed in the toxicology were being prescribed to the deceased at the time of death and therefore these drugs should not be considered as being illicit

NRS is not informed about the levels of drugs found, or whether the drugs had been prescribed to the deceased. In any case, the "UK Drug Strategy" definition of a drug-related death (which NRS applies) does not exclude deaths because there was a low level of drug found or because they had been prescribed to the deceased (see Point 2.b in [Appendix A1](#)).

4. Where the pathologist’s Cause of Death consisted of several elements, only one of which was related to illicit drug intoxication, and where the pathologist (or the Local Critical Incident Monitoring Group) decided that the non-illicit drug element was the main cause of death whereas the NRS decided that the death was in fact drug-related (it should be noted that in the majority of cases where the Cause of Death consists of

several elements the NRS reach the same conclusion as the pathologist as to what the single main Cause of Death is).

5. The Data Collection Coordinator was not informed about a drug-related death. For example, when there is no evidence at the time of death to suggest that a death is drug-related the Police Sudden Death report would not show the death as being a suspected drug-related death. Occasionally, via post-mortem and toxicology testing, the Procurator Fiscal will later find that such a death is in fact a drug-related death. In some areas the Procurator Fiscal does not tell the police and the Local Critical Incident Monitoring Group about such a drug-related death and consequently ISD will not be sent a NDRDD record. The NRS will normally know about these drug-related deaths as they receive toxicology and cause of death information directly from the pathologist. Note that this scenario will not arise in areas where the pathologist has direct links with the Local Critical Incident Monitoring Group and the Data Collection Coordinator.
6. There is an ongoing criminal investigation surrounding a drug-related death and the Procurator Fiscal has not given permission for certain information relating to a death to be released to the Data Collection Coordinator and the Coordinator has consequently been unable to complete a NDRDD record for the death. However, the NRS may have enough available information to define the death as a DRD.
7. For the NDRDD, the place where someone dies determines what area the death is assigned to. However, NRS's figures for drug-related deaths in Scotland are normally registered by the geographical area of the usual place of residence of the deceased. If the place of residence is outside Scotland, then the location of death within Scotland is assigned. In the case of someone who had recently moved residence within Scotland, NRS is likely to count the death by the former area of residence (provided that he/she had been resident there for at least 12 months). This could lead to small discrepancies in the number of DRDs that NRS and NDRDD assign to a particular area of Scotland.

5. NDRDD versus SCDEA Figures

The definition of a drug-related death used by the Association of Chief Police Officers, Scotland (ACPOS) is:-

“Where there is prima facie evidence of a fatal overdose of controlled drugs. Such evidence may be recent drug misuse, for example controlled drugs and/or a hypodermic syringe found in close proximity to the body and/or the person is known to the police as a drug misuser although not necessarily a notified addict.”

The process for identifying a death as drug-related and triggering the return of a NDRDD record to ISD is the same as the process by which the SCDEA arrive at their figure for confirmed drug-related deaths:-

- 1) The Police Sudden Death report contains information that shows that the death meets the ACPOS drug-related death definition given above e.g. there is evidence of a fatal overdose of controlled drugs
- 2) The pathologist (or Drug-Related Death Monitoring group) confirms the death as being drug-related following post mortem examination and toxicology testing

Given that the criteria by which deaths are counted as being (confirmed) drug-related deaths by SCDEA is the same as the criteria used to decide whether a NDRDD record is

returned to ISD, one would expect the number of drug-related deaths in the finale NDRDD cohort to be similar to the number reported by SCDEA.

The table at the start of [Appendix A5](#) shows that for 2011, the SCDEA reported 50 more drug-related deaths than make up the final 2011 NDRDD cohort. However 208 of the 488 SCDEA deaths are “suspected” and it is likely this number will reduce as some of these suspected deaths are deemed not drug-related. Furthermore, 36 NDRDD records were returned to ISD that were excluded from the final NDRDD cohort because they were coded by NRS as being ‘intentional self-poisoning’. It is possible that these deaths are included in the SCDEA figure and if these 36 deaths are subtracted from the SCDEA figure, then the numbers in the 2011 NDRDD cohort and 2011 SCDEA deaths are much closer.

A6 – Early Access Details (Including Pre-Release Access)

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", ISD are obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access and, separately, those receiving extended Pre-Release Access.

Standard Pre-Release Access:

Scottish Government Health Department
NHS Board Chief Executives
NHS Board Communication leads
Scottish Government Pharmacy Policy

Extended Pre-Release Access

Extended Pre-Release Access of 8 working days is given to a small number of named individuals in the Scottish Government Health Department (Analytical Services Division). This Pre-Release Access is for the sole purpose of enabling that department to gain an understanding of the statistics prior to briefing others in Scottish Government (during the period of standard Pre-Release Access).

Scottish Government Health Department (Analytical Services Division)
Scottish Government Justice Department (Analytical Services Division)

Early Access for Quality Assurance

These statistics will also have been made available to those who needed access to help quality assure this publication:

NDRDD Report Working Group
National forum on drug-related deaths – data collection subgroup
Vice-Chair of the National Forum on Drug-Related Deaths
Vital Events Statistician, National Records of Scotland
Public Health Adviser (Substance Misuse) NHS Health Scotland
Assistant Director of Health and Care – Scottish Prison Service

A7 – Publication Metadata (including revisions details)

Metadata Indicator	Description
Publication title	The National Drug Related Deaths Database (Scotland) Report 2011
Description	A report into a subset of the drug-related deaths in Scotland that occurred in the calendar year 2011
Theme	Health and Social Care
Topic	Causes of Death
Format	PDF with Excel tables
Data source(s)	<p>Data from the National Drug Related Deaths Database held by ISD. Data is collected at a local level by data co-ordinators. For each record they access a variety of sources including drug treatment services, GPs, prisons, police etc.</p> <p>Data from the National Records of Scotland (NRS) for drug-related deaths in 2011. This was supplied to ISD by the NRS for this report.</p>
Date that data are acquired	Data for this report were submitted to ISD by July 2012 and were then quality assured. Note: data are gathered soon after each death at a local level and are gradually built up before being sent to ISD before the agreed deadline. NRS data were submitted to ISD in January 2013.
Release date	30 th April 2013
Frequency	Annually
Timeframe of data and timeliness	All deaths that occurred in calendar year 2011 are considered relevant.
Continuity of data	This is the 3 rd report of its kind, but the definitions and data collection techniques used are consistent.
Revisions statement	No planned revisions
Revisions relevant to this publication	N/A
Concepts and definitions	Detailed information of the deaths relevant to this report is shown in Appendix A1 .
Relevance and key uses of the statistics	Planning; epidemiology; research; provision of services and access to services; improved understanding of topic area.
Accuracy	All records are validated when entered into the ISD database. Any issues identified within the record are highlighted to the data provider and corrected before analysis begins.
Completeness	Detailed breakdowns of completeness are available in Appendix A5 .
Comparability	The data captured can be used for comparison year-on-year.
Accessibility	It is the policy of ISD Scotland to make its web sites and products accessible according to published guidelines .
Coherence and clarity	The report is available as a PDF file with tables clearly linked for ease of use.
Value type and unit of measurement	Counts, numbers and percentages

Disclosure	The ISD protocol on Statistical Disclosure Protocol is followed.
Official Statistics designation	Official Statistics
UK Statistics Authority Assessment	N/A
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Help email	garryhecht@nhs.net
Date form completed	26 th March 2013

A8 – ISD and Official Statistics

About ISD

Scotland has some of the best health service data in the world combining high quality, consistency, national coverage and the ability to link data to allow patient based analysis and follow up.

Information Services Division (ISD) is a business operating unit of NHS National Services Scotland and has been in existence for over 40 years. We are an essential support service to NHS Scotland and the Scottish Government and others, responsive to the needs of NHS Scotland as the delivery of health and social care evolves.

Purpose: To deliver effective national and specialist intelligence services to improve the health and wellbeing of people in Scotland.

Mission: Better Information, Better Decisions, Better Health

Vision: To be a valued partner in improving health and wellbeing in Scotland by providing a world class intelligence service.

Official Statistics

Information Services Division (ISD) is the principal and authoritative source of statistics on health and care services in Scotland. ISD is designated by legislation as a producer of 'Official Statistics'. Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Official Statistics. The Code of Practice is produced and monitored by the UK Statistics Authority which is independent of Government. Under the Code of Practice, the format, content and timing of statistics publications are the responsibility of professional staff working within ISD.

ISD's statistical publications are currently classified as one of the following:

- National Statistics (i.e. assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (i.e. legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (i.e. still to be assessed by the UK Statistics Authority)
- other (not Official Statistics)

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