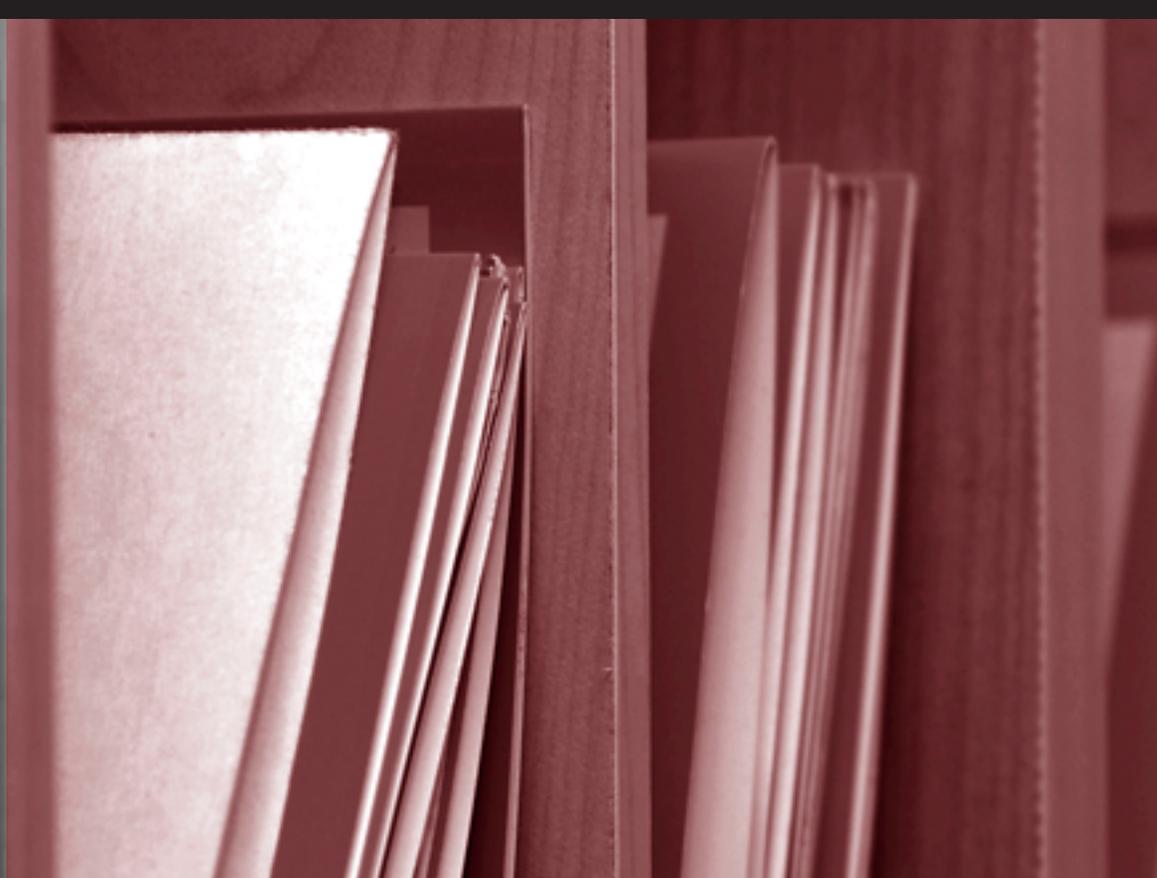


A taxonomy of preventability of overdose death: A multi-method study



Drug-related death publications

This series of publications emanates from the Government Action Plan to Prevent Drug-Related Deaths, a response to the Advisory Council on the Misuse of Drugs' report on drug-related deaths

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The National Treatment Agency for Substance Misuse

The National Treatment Agency for Substance Misuse (NTA) is a special health authority within the NHS, established by Government in 2001, to improve the availability, capacity and effectiveness of treatment for drug misuse in England.

Treatment can reduce the harm caused by drug misuse to individuals' well-being, to public health and to community safety. The Home Office estimates that there are approximately 250,000–300,000 problematic drug misusers in England who require treatment.

The overall purpose of the NTA is to:

- Double the number of people in effective, well-managed treatment between 1998 and 2008
- Increase the percentage of those successfully completing or appropriately continuing treatment year-on-year.

Reader information

Document purpose	The study aims to retrospectively analyse overdose deaths in London and to assess whether they were preventable.
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Lead author	Matthew Hickman, Imperial College London
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Target audience	Primarily providers and commissioners of drug treatment services in England.
Circulation list	Managers and commissioners of treatment services Co-ordinators and chairs of local partnerships (e.g. drug action teams and crime and disorder reduction partnerships) Service user and carer groups Commissioners of pharmaceutical enhanced services local pharmaceutical committees Regional government department leads on drugs Central government department leads on drugs.
Description	The study aims to provide a description and taxonomy of overdose deaths and their preventability. It utilises qualitative and quantitative data collection and analysis strategies. Quantitative data was derived from coroners' files and the circumstances of death. Qualitative data was taken from witness statements and overdose stories told by drug users. This data was checked by an expert panel of drug user analysts.
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Disclaimer

This publication is not a journal publication and does not constitute National Treatment Agency or Department of Health guidance or recommendations. The views expressed by this study are not necessarily those of the Department of Health or the NTA, but are based on externally refereed research.

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1 Executive summary

The aims of this multi-method study were to provide a description and initial taxonomy of overdose deaths in London. Firstly, coronial files from seven of the eight coroners' courts in London were examined to identify drug-related poisonings that took place or went to inquest in 2003 and reported a positive toxicology, or circumstances of death that implicated heroin, cocaine, methadone, MDMA, amphetamine or dihydrocodeine. One-hundred-and-fifty-one deaths were determined or suspected as drug-related poisonings, which represents approximately 75 per cent of all drug-related deaths involving illicit drugs or opiates in London in 2003. Both qualitative data, from witness statements and reports, and quantitative data were extracted from the files. In addition, 61 narratives of overdose death were collected to discover naturally occurring witness accounts of overdose death to compensate for the incomplete information available from coroners' records. Finally, a panel of expert drug user analysts checked the plausibility of the data in a sample of the witness statements and narratives, and also provided insight on the ways drug users might interpret the accounts.

In summary the characteristics of the sample from the quantitative audit were as follows:

1.1 Person characteristics

Subjects were predominantly male (80%), with a median age of 34 and a mean age of 35.8, ranging between 17 and 63. They were predominantly white (83%) with 69 per cent born in England or Wales, eight per cent in Scotland, five per cent in Ireland and eight per cent from elsewhere in Europe.

Sixty-eight per cent lived in a house or flat, ten per cent in a hostel or hotel, five per cent were street homeless and nine per cent were roofless. Twenty-eight per cent were in employment and 21 per cent were receiving benefits. Forty-six per cent lived alone and 45 per cent lived with others, while 28 per cent were in a relationship and 52 per cent were unattached.

Approximately 66 per cent of deaths had a positive toxicology for morphine, 41 per cent for cocaine, 31 per cent for methadone, 11 per cent for dihydrocodeine, 12 per cent for MDMA, 56 per cent for alcohol, 40 per cent for benzodiazepines and 12 per cent for cannabis. Polydrug use was present in the majority of the cases, with 69 different drug combinations noted. Overall, 85 per cent of deaths involved an opiate, with 32 per cent of deaths involving an opiate and cocaine. Alcohol and benzodiazepines were present in the majority of the deaths (see Table 3). In all, 21 per cent of deaths were positive for both and 75 per cent for either. Heroin as the only drug detected was noted in a small percentage of cases (7%). Overall, 64 per cent of the cases reported evidence of long-term drug use; 75 per cent were

known opiate users and 61 per cent had a history of injecting drug use.

1.2 Circumstances of death

In 55 per cent of cases, the death occurred at the weekend and in 75 per cent of the cases the subject had contact with a friend or family member in the 72 hours prior to death. In 6.6 per cent of the cases the death was rapid or instantaneous. In 54 cases (36%), a witness was not present at the time of death, in 43 (29%) at least one witness was present, in 33 at least two witnesses and in 16 at least three. In 90 per cent of cases the witness was a partner, family member or friend.

The majority of deaths occurred in the subjects' own homes or the home of a friend or family member. When a witness was present an ambulance was called in 78 per cent of cases and CPR was attempted in 27 (29%) of the cases. An ambulance arrived in over 90 per cent of the cases, but for the vast majority of cases (85%), the person was already dead when the ambulance arrived. The police did not attend in 14 per cent of cases and were called by the ambulance service in 33 per cent of cases and by a friend or family member in 19 per cent of cases.

In all, 68 per cent of subjects were matched to the Home Office Offenders Index, identifying nearly 900 previous convictions. Forty per cent of cases had previously been in prison and of those with a prison history, ten per cent of the total sample had been released within three months of the death. All but three of those with a prison history had positive toxicologies for heroin, methadone or cocaine. Thirteen of those released from prison within three months were heroin-related deaths, with one MDMA poisoning and one mixed drug poisoning involving dihydrocodeine. Evidence of treatment history was difficult to ascertain as information was gleaned from a variety of sources and there was no equivalence of information across cases. Provisional data suggests that 27 per cent of subjects were in receipt of an opiate substitution prescription (mostly methadone) with 17 issued by GP's and 19 by specialist treatment agencies. Among the deaths with a positive toxicology for methadone more than half (55%) had evidence of a prescription, but for dihydrocodeine, 16 cases had a positive toxicology for this drug and only four of these were in receipt of a script. The proportion with a positive toxicology for methadone and in receipt of a substitute script is higher than that reported in previous audits.

In common with other audits, evidence of contact with other services was extensive, with 63 per cent of subjects being in contact with a GP, 47 per cent of these within one month prior to death. In 20 per cent of cases the subject had visited A&E, half of these within one month prior to death. In 36 per cent of cases the subject had contact with specialist drug treatment services, with one third of these being within the last month prior to death. Overall, 82 per cent of cases had previous contact with a GP,

A&E department or specialist drug treatment service, with 35 per cent having contact within the last month.

1.3 Witness capacity for intervention

In summary, of the 151 cases there were only 92 cases with witness capacity (the potential to intervene). However, in only 26 (28%) was it considered that the potential existed to have produced a different outcome if a witness had acted differently or prioritised interventions differently. Factors affecting the capacity of witnesses to intervene related to their states of consciousness, continued presence in the same room as the subject, and degree of concern for the wellbeing of subjects. For the deceased, the factors affecting the capacity of witnesses to intervene were their degrees of intent or planning to take an overdose, concealed drug usage, level of consciousness, previous overdose behaviour, rapidity of onset of “signs of trouble” (necessitating a rapid intervention in response to no breathing or pulse), whether aspiration of stomach contents occurred and their continuous presence in the same room as the witness.

1.4 Antecedents to overdose death

Five clusters of antecedent events were identified from the content analysis of witness statement and reports

- 1 Recent significant event
- 2 Recent health issue
- 3 Declining health cluster
- 4 Significant past medical history
- 5 Significant past personal history.

These events or circumstances were described as being relevant to the circumstances prior to the overdose but no suggestion of causality is implied. In 25 (16.6%) of the cases one or more antecedent event was noted from one cluster, in 119 (78.8%) of the cases one or more event was noted from two clusters and in 80 cases (53%) one or more event or factor was noted from three or more clusters. For cluster one (recent significant event) 86 (57%) cases noted the event occurred within a four-week period prior to the death and a further 29 noted that an event had occurred recently or just prior to the death, but no specific timeframe was given.

1.5 Types of drug-related deaths

Ten overlapping clusters of types of risk were identified:

- 1 Novice developing habit or established user resuming the habit
- 2 Concealed or solo user
- 3 Recreational risk-taker

- 4 Physical comorbidity
- 5 Psychiatric comorbidity
- 6 Susceptible or vulnerable user
- 7 Marginalised environment user
- 8 Institutionalised user
- 9 Release or discharge user
- 10 Dependent users “doing the usual thing” – with no recent significant event noted

Cross-cutting these clusters were issues of tolerance, overloading, intent to overdose, mishap or injury following intoxication, unknown drug quality/purity, the role of confounders (sudden collapse seen as normal behaviour for the deceased), and temporary witness incapacity.

1.6 Issues

The following issues emerged from the qualitative analyses of witness statements and narratives:

- 1 The need to expand on the “signs of trouble” listed in current promotional material to encompass a fuller list of possible signs for both respiratory depression and stimulant deaths, to take into consideration differences in skin colour, and to highlight confounding factors (where sudden collapse or snoring is viewed as “normal” for the drug user)
- 2 There was little evidence suggesting the practice of ineffective interventions such as injecting saline or immersion in cold water; however slapping to determine a person’s level of consciousness or walking them around to maintain consciousness was reported. The efficacy of CPR was also called into question. Feedback to witnesses attempting resuscitation appeared to be scant
- 3 Witnesses to overdose deaths reported both positive (catalyst for change, seeking help, reducing drug use, changing from injecting to smoking) and negative (haunting, self-blame, need for support, destabilisation) as a consequence of witnessing an overdose death
- 4 Fear of the police, arrest and appearing in court and misunderstanding of court procedures, verdict and cause of death were widely reported and appeared to impact negatively on witness behaviour at the time of overdose or following the death
- 5 Problematic drug culture issues such as involvement in crime, scoring and sharing as a group activity, the culture of excess, and issues associated with establishing drug quality and purity emerged intermittently as areas of concern. The uncertain status of illicit drug use once a death had occurred

revealed a complex and often conflicting set of issues for drug users and service providers

- 6 Public sector issues such as attitudes of service providers that are patronising or based on stereotypes whereby subjects are discouraged from seeking help; waiting for a placement in a rehabilitation or detoxification programme; enforcement of rigid rules or protocols deterring subjects from making initial contact with services, and non-recognition of crisis or critical situations prior to the overdose were all noted. The issue of pain management for drug users appeared to be a concern for users requiring relief of acute or chronic pain. Contemplating the prospect of hospitalisation and not having access to their usual drugs also appeared to be an issue deterring users from seeking treatment. Waiting lists for drug treatment services were reported, but there were also similar numbers on waiting lists for hip and spinal surgery.

1.7 Conclusions

Opportunities do exist to prevent overdose deaths and many of these depend on improved communication between drug users, and between service providers and drug users, with specific reference to assessing the risk of altered tolerance, norms of sharing and scoring, assisted injecting, checking vital signs during drug use, knowing how to prioritise actions once signs of trouble arise, prevention literature including information on stimulant overdose signs of trouble, specific information on assessing drug quality and polydrug use risks (especially for mixing respiratory depressant drugs and stimulants), and detailed written information on all drugs literature being available in all languages.

The quantitative description of the drug-related deaths provides a familiar picture, reported by other audits in the UK and Australia.

- The majority of deaths were in subjects with a history of opiate use and drug dependence, and drug-related deaths are on average older and more likely to be male than problem drug users in treatment or in the population
- Toxicology reveals extensive polydrug use prior to death
- It is not always clear which drug or combination had a role in the death
- Equally, the range of drugs may not be fully captured by the drugs mentioned on the death certificate, potentially limiting the use of routine mortality statistics to monitor the type of drug-related death
- In contrast to other audits, there was a high number (and proportion) of deaths with a positive cocaine toxicology in London
- Further contact with services was considerable in the time before death, and the majority of subjects may have experienced a significant event prior to their death

- In approximately one-third of cases there was evidence of recent release from prison or current substitute prescription.

The qualitative data from inquisition files and overdose stories gave a complex picture of the antecedent events and immediate circumstances prior to death:

- Witness capacity was reduced because of their own states of consciousness, lack of knowledge of drugs used by the deceased, and lack of attention or failure to recognise warning signs
- In the majority of deaths, significant health or social events were noted that may have contributed to the subsequent fatal overdose
- Clearly, this study cannot attribute causality as chronic health and social problems are features of many problem drug users' lives. However, it would be worth testing whether the deceased experience more problems prior to death and considering how services might better identify and manage these chronic problems and its potential in preventing drug-related death
- We described at least ten types or clusters of drug-related deaths, which often overlapped, because of the multiplicity of circumstances and complexity of the deaths
- Drug users continued to express fears about dealing with ambulance crew and the police and about the processes of giving statements and going to coroners' courts.

This data implies prevention should consider addressing the management of chronic health and social problems, as well as witness capacity, and the drug-taking culture and environment. The loss of an opportunity for prevention often involved a lack of communication and "duty of care" between drug users. In a few cases, drug users have resuscitated an overdosing friend but because they did not explain what had happened, their friend used again, fatally. If an overdose happens, drug-using friends and associates will only be able to assist if they are checking on each other regularly and thoroughly and know what to do if specific vital signs are missing. Consideration should be given to campaigns that raise awareness of signs of overdose, but also seek to encourage a shared responsibility or "duty of care" for other drug users. However, deaths did occur in sites that militate against any effective monitoring or alerting the ambulance service, and any intervention needs to address and remove these hazardous injecting environments (for example, through considering supervised injecting rooms).

2 Aims of the study

The study aims to provide a description and taxonomy of overdose deaths and their preventability in London. The study uses both qualitative and quantitative data collection and analysis

strategies. Coroners' files provided quantitative data on the deceased and the circumstances of death. Qualitative data comprises witness statements contained in the coronial records and overdose stories told by drug users. This data was checked by an expert panel of drug user analysts and examined to reconstruct the event, the role of witnesses and to identify opportunities for preventing overdose death.

3 Factors of interest

Variables of interest were gathered and analyses were conducted to:

- Describe the characteristics and circumstances of overdose death in London in 2003
- Conduct a qualitative analysis of coroner's records and witness accounts of the death to develop a classification of the types of overdose death
- Provide an initial taxonomy of overdose scenarios, from content analysis of witness statements and narratives of overdose death
- Use witness statements and overdose stories as narratives to reveal norms and assumptions governing behaviour in relation to overdose
- Analyse narrative anticipation themes to show opportunities and obstacles to responding to overdose. In providing narrative data, storytellers give details that anticipate the end of the unfolding story. In explaining the outcome of a death, story narrators thus describe factors that led up to it and actions that may have been taken to prevent it (opportunities lost are presented as "excuses" and obstacles as "reasons" preventing their interventions)
- Combine findings from the taxonomy of overdose scenarios with the opportunities and obstacles identified above to comment on the potential impact of specific interventions to improve overdose survival
- Inform prevention initiatives and provide a baseline audit to measure progress of strategies to prevent overdose.

4 Methods

4.1 Data collection strategies

MREC approval was sought and granted for the study. Initially, we intended to extract a list of drug-related poisoning deaths from the Office for National Statistics (ONS) and follow these up at the coronial courts to collect details of the circumstances of death. However, given potential delays at ONS before data could be provided, we approached coroners directly and sought to identify the cases through examining all paper inquisition files stored at

each court. These cases were subsequently checked against ONS records and any missing cases if possible were examined. A data collection instrument was developed to collect both qualitative and quantitative data (see questionnaire in appendix). A total of 151 inquisition files were identified.

Sixty-one narratives of overdose death were collected with the help of ten story collectors. The story collectors (mostly working in treatment agencies or outreach services) recruited storytellers through their own networks. A story collector pack was developed providing instructions on how the overdose death stories should be recorded and sent back. At no stage did the researchers have any contact with the storytellers or attempt to "frame" the stories in any way. These stories were collected to discover naturally occurring witness accounts of overdose death to compensate for the incomplete information available from coroners' records. Twenty-six of these "stories" were submitted as written accounts of an overdose event. The remaining 35 were submitted as audio recordings and then transcribed.

4.2 Analysis

- 1 Description of the subjects, toxicology and circumstances of death
- 2 Critical review of the data by a panel of expert drug user analysts, to check on the plausibility and provide insights on the ways in which drug users might interpret the accounts given in these stories and statements
- 3 Narrative methods were used for the analysis of stories and content analysis for witness statements and reports.

The study design combined analyses of these results so that the weaknesses of each approach were compensated by the strengths of the others.

5 Sample and inclusion criteria

Access was secured at seven of the eight coroners' courts in London. One-hundred-and-fifty-one inquisition files were identified where the death either occurred in 2003 or went to inquest in 2003 and where one or more of the following drugs was implicated in the death: heroin, methadone, dihydrocodeine, cocaine, ecstasy, amphetamine or other illicit substances as specified under the 1971 Misuse of Drugs Act.

Sixty-one narratives of overdose death were collected and 19 of the storytellers were from BME (Black or minority ethnic group) backgrounds. Of the 61 narratives collected, 54 met the inclusion criteria:

- The story described an overdose scenario where the person died as a consequence of the overdose

Site	Cases	%	Unintentional injury – drug dependence, abuse, accident or misadventure	Unintentional or intentional injury – open	Intentional injury – suicide	Natural causes or other cause
City of London	1	1%				1
Southern	9	6%	7	1	1	
Eastern	53	35%	42	7	4	
Inner west	34	23%	23	6	5	
Northern	25	17%	19	1	3	2
Western	9	6%	6	3		
Inner north	20	13%	18	1	1	
Total	151	100%	115	19	14	3

Table 1: Drug-related deaths. Coroner’s court and verdict

- The death must have occurred within the last five years in the UK
- The narrator must have been over the age of 18.

6 Outcome measures

Quantitative data on the deceased and circumstances of death were analysed to give an audit of overdose death in London (see section 7.1). Qualitative data was merged with these findings to further classify types of death (see section 7.7) and give further insight into the circumstances preceding the overdose. This section concludes with an overview of issues emerging from the qualitative analysis. Next, our findings were taken together with the norms and assumptions governing behaviour in relation to overdose that were discovered as a result of further narrative and content analyses of the qualitative data. This shows what opportunities there might be for preventing future overdose deaths (see section eight) and allows a concluding commentary to be made on the potential impact of specific interventions to improve overdose survival.

7 Findings

7.1 Audit of drug-related deaths in London

7.1.1 Identification of cases

In total, 151 deaths were determined or suspected as drug-related poisonings, which represent approximately 75 per cent of all (illegal) drug-related deaths in London in 2003 (C Griffiths, Office of National Statistics, personal communication). Table 1 shows the distribution by coronial court and verdict. Among these deaths investigated during 2003, 110 (73%) also died in 2003, 40 died in 2002 (26%) and one had died in 2001. On average, it takes six months for a case to get to inquest, after which the death is registered. (The court must wait until it receives statements, reports or letters from a variety of sources, such as family members, police officers, toxicologists and medical practitioners before the inquest can be held.) Routine mortality statistics report the number of drug-related poisonings by year of registration or by year of death by International Classification of

	Number		Potentially		Death		Toxicology (µg/ml)		
Total deaths	151 ¹	100%	Fatal (% by drug)		Certificate (% by drug)		Mean	SD	Median
Any toxicology	149	99%							
Heroin	99	66%	68	69%	35	35%	0.35	0.35	0.26
Methadone	47	31%	30	64%	13	28%	0.87	0.92	0.54
Alcohol	84	56%	0	0%	17	20%	871.0	888.7	590.0
Cocaine	62	41%	20	32	17	27%	1.43	2.70	0.42
Benzodiazepines	60	40%	0	0	2	3%	0.45	0.50	0.27
Dihydrocodeine	16	11%	50	50	4	25%	5.03	6.22	2.07
MDMA or amphetamine	18	12%	6	33	5	28%	1.68	1.84	0.84

Table 2: Drug-related deaths. Drugs present in toxicology, potentially fatal, mentioned on death certificates and average levels

Among deaths positive for heroin	Among deaths positive for methadone	Among deaths positive for cocaine
<ul style="list-style-type: none"> • 26% were positive for both alcohol and benzodiazepines • 42% were positive for benzodiazepines • 62% were positive for alcohol • 82% were positive for alcohol or benzodiazepines 	<ul style="list-style-type: none"> • 22% were positive for both alcohol and benzodiazepines • 57% were positive for benzodiazepines • 49% were positive for alcohol • 81% were positive for alcohol or benzodiazepines 	<ul style="list-style-type: none"> • 10% were positive for both alcohol and benzodiazepines • 32% were positive for benzodiazepines • 47% were positive for alcohol • 69% were positive for alcohol or benzodiazepines

Table 3: Deaths grouped by presence of heroin, methadone and cocaine, or other drugs if these are absent

Diseases (ICD) code, and also report an extract of drug-related deaths based on the specific drug mentioned on the death certificate.

Nineteen deaths (13%) were certified as open and 14 (9%) as suicide verdicts. One of the deaths certified as natural causes was clearly injury due to drug-related poisoning. Over three-quarters (115, 76%) of the deaths were certified as a form of injury or accident: for example, abuse, misuse or misadventure (70, 47% of total deaths), dependence (23, 15%) and non-dependence (21, 14%). These categories relate to different ICD codes given as the underlying cause of death.

Overall, 64 per cent of the cases had reported evidence of long-term use (67% among deaths categorised as “non-dependent”); 75 per cent were known opiate users and 61 per cent had a history of injecting drug use (76% and 67% respectively among deaths certified as “non-dependent”).

Therefore – as reported in other audits – the majority of deaths were in subjects with a history of opiate use and drug dependence, and there seems little difference in deaths coded as unintentional poisoning, drug dependence non-dependence.

7.2 Personal characteristics

In summary, the characteristics of the sample were as follows:

- Gender: 122 (80%) male, 29 (20%) female (two males were transgender)
- Age: median and average age 34 and 35.8 respectively, with 31 per cent aged under 30, 37 per cent aged 30-39, and 33 per cent 40+ and age range: males – 18-63 and females 17-59
- Ethnic group: 126 (83%) white, nine (6%) Black or minority ethnic group
- Country of origin: 104 (69%) born in England and Wales, 12 (8%) Scotland, eight (5%) Ireland, 12 (8%) other Europe

- Accommodation: 103 (68%) lived in a house or flat, 15 (10%) in hostel or hotel, eight (5%) street homeless, 13 (9%) roofless or living with friends
- Source of income: 42 (28%) working, 31 (21%) benefits, 78 (52%) unknown
- Living arrangements: 69 (46%) alone, 68 (45%) with others, 14 (9%) unknown
- Relationship status: 42 (28%) in relationship, 79 (52%) unattached, 30 (20%) unknown.

In London (as reported by other audits), victims of drug-related deaths are on average older and more likely to be male. Among opiate users, especially injectors, the risk of death increases with duration of use. One potential explanation for the difference by sex is an ageing cohort, which either had a higher ratio of males to females than more recent cohorts, or if females have a higher cessation rate over time becomes predominantly more male. For example, among deaths involving an opiate aged under 30 (n=25), 11 (32%) were female compared to 6/51 (11%) in the 30-39 year old age-group. Among the non-opiate related deaths, only 2/22 (11%) were female. Equally, there is some evidence to suggest males may have a higher mortality rate.

7.3 Toxicology

The interpretation of toxicology and the drugs potentially implicated in a death is complex. Firstly, the therapeutic, toxic and potentially fatal levels can overlap and can vary considerably between individuals because of tolerance. Comparatively small doses of heroin could prove fatal to naive users, and some dependent users survive with levels of heroin, methadone or cocaine that have proved fatal to other dependent users. Currently, the level, changes or loss of tolerance cannot be quantified. Secondly, although drugs interact and can potentiate the impact of each other (for example, benzodiazepines and alcohol can increase the likelihood of respiratory depression when taken with heroin) the scale of the interaction also cannot be quantified.

Table 2 presents the range of drugs found by toxicology, the average levels, and number reaching potentially fatal levels, and the drugs specified on the death certificate.

In two of the drug-related deaths, there was no toxicology, and in one suspected drug-related death only alcohol was detected (Table 2).¹ In addition, 18 (12%) of the cases were positive for cannabis and 51 (34%) deaths were positive for a range of other drugs. Approximately two-thirds of the deaths had positive toxicology for morphine (heroin) (66%), 31 per cent methadone, 41 per cent cocaine, 11 per cent dihydrocodeine, 12 per cent MDMA or amphetamine,² 56 per cent alcohol and 40 per cent benzodiazepines. Perhaps for the first time, cocaine (most likely taken in the form of crack) was detected in more drug-related deaths than methadone overall and also was more common than methadone among deaths involving heroin (44% vs. 26% respectively).

Poly or multiple drug use was present in the majority of deaths. In the 151 deaths, there were sixty-nine different combinations of drugs detected (data available on request). Table 3 summarises the toxicology for heroin, cocaine, and methadone. Eighty-five per cent of the deaths involved an opiate, 32 per cent an opiate and cocaine, and of the non-opiate deaths, nine per cent involved cocaine, six per cent MDMA or amphetamine and three (2%) were suspected of being drug poisonings but missing any toxicological evidence.

Alcohol or benzodiazepines were present in the majority of deaths (see Table 3). In all, 21 per cent of deaths were positive for both and 75 per cent for either.³

Table 4 groups the deaths by presence of heroin, methadone and cocaine, or other drugs if these are absent.

However, each of these categories also can involve other drugs. Table 5 illustrates the range of combinations (37) of drugs detected in toxicology just for the deaths involving heroin.

Therefore, heroin was the only drug found in only six deaths (7%). There were no significant differences in the average level of drug detected and verdict (intentional vs. unintentional injury) for heroin, methadone or cocaine.

7.4 Potentially fatal levels

The combination of drugs individually reaching a fatal level was smaller (see Table 2). For example, 69 per cent of deaths with positive toxicology for heroin, 64 per cent for methadone, 50 per cent for dihydrocodeine, and 32 per cent for cocaine were above typical fatal levels for experienced users.⁴ None of the deaths recorded fatal levels for benzodiazepines or alcohol alone. In one case, heroin, methadone and cocaine were all above fatal levels. There were more occasions of subjects with levels of heroin and cocaine above fatal levels (7) than methadone and heroin (3).

Drug category	Frequency	Percentage
Heroin	45	30%
Heroin-cocaine	28	19%
Methadone	18	12%
Heroin-cocaine-methadone	16	11%
Heroin-methadone	10	7%
Cocaine	14	9%
Methadone-cocaine	3	2%
Dihydrocodeine	8	5%
MDMA	6	4%
No toxicology	3	2%
Total	151	100%

Table 4: Drug-related deaths in London. Combinations of positive toxicology for heroin, cocaine, methadone and other drugs³

In 27 cases, a potentially fatal level was not found for any of the individual drugs. Although the actual toxicological level may be less important than its presence in determining the cause of death, the circumstances of these deaths are summarised below:

Death occurred in hospital with delays between consumption, death and taking of toxicological samples

- Aspiration pneumonitis (aspiration of gastric contents into the airways) where the onset of death may be delayed and in this time the levels of the drug are falling
- Evidence of loss of tolerance
- Potentiated effects of drugs taken in combination
- One case of first-time usage for cocaine.

Table 5 also shows which drugs were specified on the death certificate. Thus, heroin was mentioned on 35 per cent of the death certificates of subjects with positive toxicology for heroin; methadone was mentioned in 28 per cent of cases, cocaine in 27 per cent of occasions. The combinations of drugs mentioned on death certificates is shown in Table 6. The most common categories were:

- 1 Misuse with no mention of a specific drug (half of which involved heroin but also other drugs including methadone, cocaine, dihydrocodeine, and MDMA or amphetamine)

¹ In each of the three cases with no toxicology or limited toxicology, the body was not found for a period of time (from several days to three months), however, evidence of alcohol consumption and drug paraphernalia was found near each body.

² MDMA and amphetamine were combined because there was no evidence of amphetamine injection, and in the absence of opiates or cocaine, the drugs implicated in the death were MDMA in all but one case of MDMA and amphetamine poisoning

³ No deaths listed resulted from benzodiazepines, alcohol or both

⁴ Potentially fatal levels: heroin (0.15µg/ml), methadone (0.4µg/ml), cocaine (1µg/ml), dihydrocodeine (2µg/ml), MDMA or amphetamine (0.5–1µg/ml), benzodiazepines (5µg/ml), alcohol (4.5mg/ml)

- 2 Opiate (which from the toxicology all involved heroin and in seven, cocaine or methadone)
- 3 Heroin alone (which was true based on the toxicology in only six cases).

Furthermore, specific drugs are broken down at different rates, adding to the complication of interpreting the toxicology if the death occurred several hours after the last drug-taking event. In a separate exercise to be reported shortly, we will review the pathology and toxicology to identify if possible the underlying mechanism of death and drug responsible.

There was no relationship in the average level of heroin and whether it was mentioned on the death certificate, whereas deaths mentioning other drugs were more likely to have a higher load. For example, for deaths with a positive test for methadone the mean level was 1.4ug/ml for deaths where methadone was mentioned compared to 0.6 for those deaths where methadone was not mentioned on the death certificate. Nevertheless, there was no significant difference for methadone relating to whether the toxicology was potentially fatal (above 0.4ug/ml), with 10/29 deaths with potentially fatal levels of methadone meriting mention on the death certificate.

In summary, the toxicology data revealed extensive polydrug use, often with very high potentially fatal levels of multiple drugs. In London, among drug-related deaths involving opiates and other illicit drugs, cocaine is now the most common drug detected after heroin. The public health implications of the potential interaction of cocaine and heroin need to be explored. The discrepancy between drugs detected in the toxicology, those with potentially fatal levels, and drugs specified on the death certificate has been noted previously. It continues to matter as routine mortality statistics (and the drugs specified on them) are a key data source for monitoring the number and type of drug-related deaths.

7.5 Circumstances of death

In the description of the death we focused on two areas: the acute event and antecedent circumstances. In public health terms these deaths are premature and preventable. In the following section we describe in more detail the circumstances leading to death and consider how the deaths might have been prevented through a combination of management of the immediate toxic effects or the events leading up to the death.

The acute circumstances are summarised as follows:

- In 55 per cent of cases, the death occurred at the weekend
- In 75 per cent of the cases, the subject had contact with friend or family in 72 hours prior to death
- In ten cases (6.6%), death was documented as rapid or instantaneous (within minutes of ingestion)
- In 54 cases (36%), a witness was not present at the time of death, in 43 (29%) at least one witness was present, in 33 at least two witnesses and 16 at least three
- In 90 per cent of cases, the witness was a partner, family member or friend
- A majority of deaths occurred in own home or home of family member or friend: 67 (45%) cases own home, home of family member or friend in 31 (21%), hotel/hostel in (17, 12%), public space in 11 (7.3%), hospital (17, 11%) and other or unknown in nine cases
- Where present, witnesses called ambulance in 78 per cent of cases and attempted CPR in 27 (29%) of the cases
- An ambulance arrived in over 90 per cent of the cases, but for the vast majority of occasions (115, 85%) the person was already dead when the ambulance arrived
- The police did not attend in 14 per cent of cases, and were called by the ambulance service in 33 per cent, and friend or family in 19 per cent.

Her	6	HerCoc	6	HerDih	1	HerMethCoc	1
HerAlc	11	HerCocAlc	5	HerMd_AmAlc	1	HerMethCocAlc	4
HerAlcOth	4	HerCocAlcOth	6	HerMd_AmAlcOth	1	HerMethCocAlcOth	1
HerBenzo	2	HerCocBenzo	3	HerMeth	1	HerMethCocBenzo	5
HerBenzoAlc	7	HerCocBenzoAlc	3	HerMethAlc	3	HerMethCocBenzoAlc	2
HerBenzoAlcOth	6	HerCocBenzoDihAlcO	1	HerMethBenzoAlcOth	2	HerMethCocBenzoDih	1
HerBenzoDihOth	1	HerCocBenzoOth	1	HerMethBenzoDih	1	HerMethCocBenzoOth	1
HerBenzoMd_Am	1	HerCocDih	1	HerMethBenzoDihAlc	1	HerMethCocMd_AmAlc	1
HerBenzoOth	3	HerCocMd_AmAlc	2	HerMethBenzoOth	1	HerMethCocOth	1
						HerOth	1

Table 5: London mortality audit of deaths involving heroin. (Key – Her = heroin, Alc=alcohol, Benzo = benzodiazepines, Coc = cocaine, Dih = dihydrocodeine, MD_AM = MDMA or amphetamine, Oth = other drug.)

Alc	1	1%	Meth	8	5%
Coc	10	7%	MethAlc	2	1%
CocOth	1	1%	MethBenzoAlc	1	1%
Dih	3	2%	MethMD_Am	1	1%
DihAlc	1	1%	MethOth	1	1%
Her	26	17%	Misuse	49	32%
HerAlc	5	3%	MisuseAlc	1	1%
HerBenzo	1	1%	Opiate	24	16%
HerCoc	2	1%	OpiateAlc	4	3%
HerCocAlc	1	1%	OpiateCoc	3	2%
MD_Am	3	2%	OpiateOth	1	1%
MD_AmAlc	1	1%	Oth	1	1%

Table 6: London mortality audit. Combinations of drugs mentioned on death certificates

There was no difference in the average toxicological levels of heroin, methadone or cocaine for deaths with or without witnesses present. In 92 (61%) of the deaths there was at least one witness reported as being present and the death was not reported as instantaneous. The “preventability” of these deaths will be described in the next section.

In the antecedent events we refer to prison history (and release from prison in the previous three months), evidence of substitute prescribing and other potentially significant antecedent events (in the month prior to the death).

Prison and arrest history were determined through record linkage with the Offenders Index.⁵ Release within three months of the death was determined by evidence in the coronial file and information on the prison sentence.⁶ Prescription and contact with treatment services were extracted from the coronial file and, therefore, may underestimate the level of contact or number of subjects with a prescription because of incomplete data.⁶

The offending history is shown in Table 7. In all, 103 (68%) subjects were matched to the Offenders Index identifying nearly 900 previous convictions (mean and median 8.7 and five respectively). Sixty (40%) of the cases had previously been in prison, of which 15 (25% of those with a prison history and 10% of the total sample) had been released within three months of the death.

All but three of those with a prison history had positive toxicologies for heroin, methadone or cocaine. Thirteen of the deaths released from prison within three months were heroin-related deaths, with one MDMA poisoning and one mixed drug poisoning involving dihydrocodeine.

Previous convictions			Prison history		
No	48	32%	No	91	60.3%
Yes	103	68%	Yes	60	39.7%
Number of convictions			Time before release and death		
Mean	8.7		< 3 months	15	25%
Median	5		3–12 months	4	7%
Minimum	1		1–5 months	16	27%
Maximum	58		> 5 years	26	43%

Table 7: London mortality study – substitute prescribing

Treatment history is only partially given and contains some discrepancies between witness accounts and information in the coronial files (see Table 8).

Provisional data suggests that 41 (27%) were in receipt of an opiate substitute prescription (mostly methadone), with 17 issued by GPs and 24 by specialist treatment agencies. Among the deaths with a positive toxicology for methadone, more than half (55%) had evidence of a prescription. The coronial files held evidence that only four people were in receipt of dihydrocodeine script, with 16 cases having positive toxicology. The proportion with a positive toxicology for methadone and in receipt of a substitute script is higher than several other audits.

In common with other audits, evidence of contact with services was extensive:

- In 100 (63%) cases the subject had contact with GP, 47 per cent within one month of the death
- In 30 (20%) cases the subject had visited an A&E, half within one month of the death
- In 55 (36%) cases the subject had contact with specialist drug treatment, one-third within the last month.

Therefore, in 124 (82%) cases the subject had previous contact with A&E, a GP or specialist drug treatment services including 53 (35%) in the last month.

In summary, contacts with services were considerable in the time before death. The majority of subjects may have experienced a significant event prior to their death, which is not uncommon among chaotic problem drug users. At least 41 people had evidence of current substitute prescription, with over half of those prescribed methadone showing positive toxicology. In addition,

⁵ We acknowledge with thanks the support of Andrew Kalinsky (Home Office) and note that this section must be reviewed by Home Office before release. Unfortunately, the offenders index does not record date of release so as recommended by Home Office an approximate was made by halving the time of the most recent sentence.

⁶ A parallel study in Scotland will enable some assessment of the completeness of coronial files documenting treatment and prescription history

15 of the drug-related poisonings were in people recently released from prison; and 51 (34%) with either a recent history of prison or current substitute prescription.

7.6 Witness capacity for intervention

Of the 151 cases, 92 (60%) cases had witness capacity – the potential for a witness to intervene (therefore in 40% of the 151 cases there was no witness reported as being present). However, in only 26 (28%) of the 92 cases was it considered that the potential existed to have produced a different outcome, i.e. if a witness present had acted more swiftly or prioritised the order of interventions in a different way. In the other 66 cases, a convergence of factors (such as intoxication of witness, deceased “seemingly” falling asleep and subsequent aspiration of vomit into airways going unnoticed) appeared to preclude the possibility of effective intervention on the part of the witness or witnesses present, as by the time the “signs of trouble” were recognised the person had either died or the situation proved to be irreversible even when ambulance crew attended the scene and advanced resuscitation skills were implemented (i.e. Glasgow Coma Score of three recorded prior to the deceased being pronounced life extinct).

The following section summarises the witness and deceased characteristics deemed relevant. In this section and throughout the body of the report the qualitative findings are illustrated with examples from the coronial file data and where appropriate examples from the overdose death stories are also included to describe the same features.

7.6.1 Factors impacting on capacity to intervene

Of the 92 cases with one or more witnesses recorded as present, the witness circumstances that impacted or limited the possibility of intervention (ascertained from the witness statements present in each of the files – and where possible multiple witness sources were used to confirm the accuracy of the details) were:

- Forty-two witnesses were nearby (not in the same room) and of these 19 were either intoxicated or asleep.

Deceased (male aged 44, 20 year history of alcohol and heroin abuse, Hep C+). When he returned to the flat he was drunk and upset. He was swearing and said he had an argument with his wife and didn't want to be disturbed as he was going to get his head down as he had work the next day. He was shouting that his wife wouldn't let his children stay with him for the night. He was slamming doors in the flat and then went into his bedroom. He came out at one point and went into the kitchen and quickly returned to his room. He again stated he didn't want to be disturbed. At one point he started crying. To me it seemed through anger. I could hear that he was still moving around for about an hour, but he seemed to calm down. At about 8.30am in the morning I was woken by the telephone – one of his workmates called – as he had not turned up for work. I went to his room and I could see him lying on the bed with his feet on the floor. He was still wearing his clothes from the day before. I thought he was dead. PM toxicology: morphine = 0.3mg/L; alcohol = 2040mg/L [Coronial file no. 12]

- Ten witnesses present were intoxicated and/or asleep and not aware that the deceased was showing signs of trouble.

(Police witness statement – Deceased female aged 39, IDU 20 years). Around her right bicep was a small leather strap which had been pulled tight. On a small table was a collection of syringes and other drug paraphernalia, including some tablets. Partner had fallen asleep and awoke about 3am as she had been breathing loudly. He then fell asleep. He awoke around 4am and found her cold to touch so he put a blanket over her before going back to sleep. He awoke around 11.30am and called the ambulance services after checking her. PM toxicology: morphine = 0.97mg/L; cocaine = 1.77mg/L; oxazepam = 0.52mg/L; diazepam = 0.53mg/L [Coronial file no. 7]

Deceased (male aged 29) was street homeless (in mid-December) and visiting a friend at a hostel. He had snuck into his room to spend the night there. They both took a cocktail of drugs and fell asleep. The friend nearly tripped over the body in the morning. He was lying face down on the floor. Friend sat the deceased up to see if he was alright and he

Treatment history	Total	%	Methadone toxicology		Dihydrocodeine toxicology	
Methadone prescribed by GP	15	10%	8	17%	1	6%
Methadone prescribed by specialist agency	22	15%	18	38%	1	6%
Dihydrocodeine prescribed by GP	2	1%		0%	2	13%
Dihydrocodeine prescribed by specialist agency	2	1%	1	2%		0%
No evidence of current script	110	73%	20	43%	12	75%
Total	151	100%	47	100%	16	100%

Table 8: London mortality audit – substitute prescribing

found that he was cold. Friend then tried to place deceased in the recovery position but he couldn't do this due to his disability. Deceased was also believed to have taken his friend's medication [methadone] after he had gone to sleep. [Coronial file no. 70]

Anyway by the time he woke up in the morning he found him on the ... dead on the sofa ... with a needle in his arm. [Narrative no. 9]

- Thirteen witnesses departed the scene after signs of trouble were evident (usually this occurred if they had supplied the deceased with drugs or they were wanted by the police) or they believed the deceased was dead and beyond help.

(Deceased is homeless and just out of prison and using drugs on a house boat). He was gouching and he decided to slip into a bit of a coma. But I mean there were a couple of policemen with the ambulance, and we had to leave because my friend was carrying and nervous he was going to get nicked and stuff like that, so left him there. Ten minutes later the ambulance did turn up and he was taken to hospital and he stayed in a coma for ten days. [Narrative no. 39]

Myself and the deceased were sitting in the front room watching TV. Deceased got up and said he was going to the kitchen to mix up the heroin that he had just bought – and take it. I carried on with the vodka and cider and watched TV. I waited about 30 minutes and he had not returned and so I went to find out and when I got to the top of the stairs I noticed him lying face down – half in the toilet and half in the hallway. I walked over and noticed that his face had gone blue and tried to wake him up by slapping him around the face. I hit him around the face 3–4 times and tried to wake him up – but he did not. I then checked the heart and pulse but there was nothing. I rolled him onto his front. I then sat on the stairs for about five minutes and got up and walked out of the flat to the shop where I used my friend's mobile phone to call his ex-wife. I told her he's gone blue – he's died – and she started to cry – so I hung up the phone. [Coronial file no. 23]

- Two witnesses were not present all of the time and had left to go to the shops.

Deceased (female aged 41) had become unwell in the few weeks prior to her death and was reluctant to seek medical assistance for DVTs and chest infections. She had continued to use heroin but was not using as much as usual due to her ill-health in the days before her death. She had been sleeping on the sofa for several days because her feet were swollen. Her partner had gone to change a video and in the hour she was absent the deceased died. PM toxicology: morphine = 0.135mg/L [Coronial file no. 75]

- Five witnesses did not respond quickly to the signs of trouble due to panic or illness or disability.

- Four witnesses were deemed to have “mixed motives” (not acting in the best interest of the deceased and more from self-interest i.e. not wanting to have the body found in their premises, wanting to access the deceased's supply of drugs, wanting to take over the flat of the deceased).

Neighbours accused two friends of the deceased (male aged 29) of leaving the deceased to die in order to take over the flat owned by the deceased – which they subsequently did. The two friends reported that the deceased appeared to be “asleep” in the chair when they left the flat. [Coronial file no. 106]

For the same 92 cases the deceased circumstances (ascertained from the witness statements) could be summarised as follows:

- Seven cases were planned deaths (suicides where intent was communicated).
- 24 cases were concealed users (where drug use prior to the onset of symptoms was unknown to witnesses present).
- In 36 cases the deceased fell “asleep” after using drugs.
- In ten cases the deceased left the room temporarily (to go to the toilet, bathroom or kitchen) and was then subsequently found by a witness after the deceased was heard to fall; after a period of time had elapsed and witnesses became concerned, or after witnesses had gained access to the deceased (i.e. in a locked bathroom).

(Police statement): Deceased (homeless male aged 34) was visiting father. He made a phone call, after counting his money, and organised to buy a large “brandy” – believed to be drugs. He then went out and on returning home got some tin foil from the kitchen and then locked himself in the toilet. However, he did not re-appear. Initially, father was not overly concerned as this had happened before and his son had been alright. (Some time later) father tried to get deceased to open the bathroom door, but was getting no response – and tried for about an hour and a half. He then decided to get the police to help him. Police called to address before for similar type of situation. Authorisation was given for door to be broken down and deceased found with no pulse. PM toxicology: morphine = 0.43mg/L; methadone = 0.16mg/L; alcohol = 1360mg/L [Coronial file no. 9]

Deceased and friend had taken cocaine and consumed alcohol. They went to a flat and continued to drink alcohol throughout the evening. His girlfriend went to bed and both deceased and friend continued to drink alcohol. Deceased went to bathroom and friend heard a noise – a “thud”. He realised the deceased had collapsed on the floor. He was making a gurgling noise and was being sick. Friend attempted mouth-to-mouth resuscitations and chest compressions. He was unable to rouse his friend. He stated he saw a needle in

the deceased's arm. PM toxicology: morphine = 0.37mg/L; cocaine = 0.67mg/L; alcohol = 210mg/L [Coronial file no. 11]

- In six cases, the deceased's behaviour was not deemed to be problematic initially, for example, collapsing on the floor was seen to be "usual" for the deceased or the deceased was believed to be intoxicated but sleeping.

Deceased (male aged 40) had discharged himself from hospital seven weeks before his death to care for his terminally ill father at home. He suffered from paranoid schizophrenia and alcoholism and was not taking his medication at the time of his death. The deceased had fallen asleep in a chair next to his father in the lounge room. It was family policy not to disturb him once he was asleep after he had been drinking. He was last believed to be alive when two nurses visited the house at 8.30am to change dressings on the father's legs and they thought he was asleep when they arrived and was lying in an awkward position so they moved him into a sitting position. In this time he was snoring. At about 12.30pm a care worker from Meals on Wheels delivered lunch to the father. About 20 minutes after this the sister of the deceased and her husband arrived and found the deceased to be dead. He was pale and grey-looking and his body was cold. PM toxicology: morphine = 0.17mg/L; alcohol = 0.17ug/ml [Coronial file no. 77]

Deceased (male aged 31) went to use the bathroom to take drugs and did not return to the lounge room. Friends went to investigate and deceased was found collapsed on floor but left where he was and put in the recovery position, as this had happened before and he had been OK. Body was warm and floppy. Friends fell asleep after drinking and awoke in morning to find deceased in the same position in the bathroom – now cold, unresponsive and with changed skin colour. PM toxicology: morphine = 0.8mg/L; alcohol = 1.0 g/L. [Coronial file no. 103]

- Ten cases were rapid onset of signs of trouble for example the deceased collapsed with the syringe *in situ*.

The last hit he had was heroin and it was like he just went to sleep – his mouth went blue, his eyes were shut and the pin was still in his arm. [Narrative no. 51]

He was suddenly woken by his dad, who came up the stairs and shouted to him and asking "What was that thumping noise?" They both looked on the floor and John was lying down having just hit the floor with a thump. He had fallen suddenly from his chair and was crouched with a needle still in his arm. It appears he had died before hitting the deck. [Narrative no. 59]

Male (false age recorded in passport) found collapsed in bathroom against radiator (burns on left side of back). Three syringes and brown substance found by body. Only living at

address for about a week. Wanted by police for three offences and had a forged passport and false identity. PM toxicology: morphine = 0.33mg/L and cannabis positive. [Coronial file no. 14]

- Ten cases with aspiration pneumonitis⁷ (which limits the ability to intervene successfully).
- 60 cases were deemed by toxicologists to have recorded a level at post-mortem of one or more drugs that were above the range recognised as being fatal.

In 17 cases the deceased died in hospital. Of these:

- Five cases were cocaine related deaths where naloxone administration is not an option and in Two of the cases the subject sustained head injuries following cocaine ingestion which contributed to the cause of death
- Three cases involved concealed usage of drugs whilst in hospital
- Two cases where signs of trouble were ignored by the hospital staff
- Two cases where the deceased was already terminally ill with AIDS
- One case with mixed motive (the witness was not acting in the best interests of the deceased)
- One case of incorrect information – thought to be cocaine but was heroin
- One case witness delay in calling services due to asthma attack
- One case full protocol including naloxone given but nearly three times the fatal level of heroin recorded at post mortem toxicology
- One case no witness statements recorded but deceased had inhaled vomit and then suffered an hypoxic brain injury.

7.7 Types of death and why overdose occurs

7.7.1 Antecedents to overdose

Five clusters of antecedent events (1. recent significant event, 2. recent health issue, 3. declining health cluster, 4. significant past medical history, 5. significant past personal history) were identified from a content analysis of witness statements (n=85) and medical or service provider reports (n=115) (using the "constant comparative method"). It is acknowledged that these events or factors also describe the circumstances of many living drug users thus highlighting the risk factors in their lives. We take these factors as relevant because the witnesses understood them as

⁷ A condition where the stomach contents are aspirated (vomited) into the airways.

such and offered the information about these events as explanations for the death.

It is important to note that there was no consistency of information available across the coronial files. There were 21 cases where no statements or reports were received. However, in 40 cases the coroner's office provided case notes or a continuation or continuity statement synthesising information from a variety of sources. Additionally, in 124 cases, statements were provided to the coroner by either police officers or ambulance crew attending the overdose scene.

Together these various sources were used to glean information about the circumstances of death and the past medical and social history of the deceased person and build up a composite, albeit partial, picture of what actually happened prior to and during the overdose situation. While quantification of most categories is provided it is most likely an underestimate in each instance because of the nature of the available information.

The majority of cases (79%) revealed one or more antecedent events or factors from two clusters and in 53 per cent of cases one or more antecedent events were noted from three or more clusters. This clustering or convergence of antecedent events was evident in both the coronial file data and the narratives. (As in the previous section, narrative data is also used to illustrate the clusters.) For example:

It was a chain of events ... there was a brother and sister who had been left money after their parents' death. I think it was in trust. But the money pretty soon went and he was dealing. Very into crack and heroin. (He was) 25, 26. His sister was younger, early 20's, and he had a girlfriend who was about 19. He didn't really have a very good injecting technique, didn't really know what he was doing so very quickly he got some sort of infection, which he had to go to hospital for. While he was in hospital his sister and girlfriend went into visit him and as is so often the case went and had a hit. The girlfriend gave the sister a hit, she injected the sister with heroin and herself, but unfortunately the sister died, she overdosed in the hospital. She was found in the toilets in the hospital. The girlfriend ran away, obviously couldn't handle what she'd done, leaving the brother in the hospital, and she was found I think it was within a day, two days at the most, overdosed herself. The brother was in a hell of a state, I mean he felt guilty anyway because his sister had started soliciting, his girlfriend was soliciting, they were both using very large amounts of crack and quite a lot of heroin and they'd gone on to injecting heroin and had very bad injecting techniques and smoking a lot of crack. Very chaotic. As I said the girlfriend had run away leaving the sister's corpse in the toilets. And she was found dead before he was released from hospital. The last time he was seen alive was at treatment services pleading for help and crying, and he was found a

week to ten days later floating in the local river – overdosed. They were also very chaotic, they'd got into the street scene very, very, quickly, originally because of the money that they'd been left, and then obviously they then started dealing and she started hustling to survive. I mean god knows what state his head was at having lost his sister and girlfriend. I can't, never could, understand why the treatment agency didn't try and help him, not that I suppose there could have been anything that would have made him feel better, but it was pretty obvious once that happened, what was going to transpire. [Narrative no. 38]

She came up my house one night, I had another girl in there ... a big argument and then ... I didn't know until I went into rehab ... three weeks later that she'd died that night, she had topped herself ... killed herself. She took a load of pills ... smack ... before that she was severely beaten an all ... by a relative ... which didn't help. [Narrative 5]

Deceased: Male aged 47, single, roofless, in and out of prison, known IDU of heroin, methadone and of late crack and Valium®. Hep C+ and frequent GP and A&E attender, Blood clots and DVT's. Abusive and non-compliant with medications.

- *Recent fight with police – sustained fracture and bruises*
- *Brother refused him accommodation two days before death*
- *Due to appear in court in the week after his death. [Coronial file no. 20]*

Deceased: male aged 31, IDU for nine years and recurrent problems with abscesses and DVT's

- *Recent release from prison*
- *Birthday day before overdose*
- *Partner recently admitted to mental health institution*
- *Partner left deceased with housing and financial difficulties*
- *Deceased went to see doctor to increase his medication because he felt he was not coping but doctor declined request and instead reduced the script. [Coronial file no. 42]*

7.7.2 Recent significant events

Recent significant events (one or more within four weeks prior to overdose death in 86 (57%) of the 151 cases) were noted in the majority of cases where witness statements or reports were available. In those cases (22) where no recent event was noted, the deceased was typically described as being street homeless, a social isolate, having died alone, or had recently arrived in London and had made few contacts. It was possible to discern a timeframe for events for the majority of cases with regard to

cluster one but there did not appear to be any clustering of specific types of events in relation to the different timeframes.

- In 20 cases, the event (robbery, attending a funeral or release from prison) occurred on the day of the death
- In 42 cases, the event occurred in the seven days prior to the death
- In 24 cases, the event occurred in the month prior to the death
- In three cases, the event occurred in the six-week period preceding the death
- In eight cases, the event occurred in the six-month period preceding the death
- In 29 cases the event occurred in an unspecified timeframe but was noted as “recent” or “just prior” to the death
- In three cases, the deceased was anticipating an event to occur either the day after the overdose or in the days following (court appearance, starting a new job).

The following six categories were identified:

7.7.2.1 Drug use issues

- Change in drug quality (1) – strong heroin (froths when citric acid added – does not readily dissolve).

Deceased was reported to have sold some of his prescriptions (diazepam, temazepam and dihydrocodeine) and bought some very strong heroin the day before his death. PM toxicology: morphine = 0.41mg/L; dihydrocodeine = 0.20mg/L [Coronial file no. 21]

- Change in supply conditions (2) – run out of methadone, drought.

She found it hard to get to sleep without smoking weed beforehand. She phoned around a few people and couldn't get anything. I've been told her friend was prescribed methadone and she decided to take a swig from the bottle to help her sleep. I think that she has done this before, but had been fine. This particular time that she did it, she overdosed and was found dead having choked on her own vomit. [Narrative no. 33]

- Change in pattern of usage (11) – experimenting, resuming the habit (but not out of institution), abstaining whilst relative staying, shift from smoking to injecting, or using a different drug.

She (female aged 59) had been addicted to opium for the past 35 years, which she smoked on a daily basis, but when she visited this country she was on methadone substitute. PM toxicology: methadone = 0.50mg/L; doxepin = 2.06mg/L [Coronial file no. 4]

I had just recently started injecting and my friend of years from school used to chase and asked was injecting good (what it felt like) and I told him it was an instant rush and it was 100 times better than chasing it so he asked me to give him a needle and I got one and asked a friend to inject us. We were all gouching and I don't know how long after – I had my eyes closed – perhaps 20 minutes – I opened my eyes to see my friend next to me and all blue, his lips too. I was so scared that all that gouching I was instantly back to normal, eyes wide open shouting to my friend ... [Narrative no. 60]

- First time usage with a new drug (1) – first time usage of cocaine
- Mule or concealed storage (3) – swallows wrap or wrap stored in rectum.

7.7.2.2 Family and home issues

- Housing issues (28) – recently evicted from housing or made homeless
- Argument or fight with partner or family member (13)
- Relationship breakdown (11)
- Recent or anticipated serious illness or bereavement of a family member (11)
- Estrangement from family members (5) – not invited to funeral or wedding, or recent rejection by family member
- Revelation or disclosure of sensitive information (5) – parentage, sexuality or abuse
- Partner or relative sent to prison or mental hospital (3)
- Family member disapproving of drug use (2)
- Custody or access issues to children or grandchildren (2)
- Anticipated release of problematic family member from prison (1).

7.7.2.3 Work and financial issues

- Financial problems (9)
- Loss of job or recently unable to work (5)
- Performance and reputation issues at work (3)
- Stress over exams or need to upgrade qualifications (2)
- Stress over starting a new business venture or job (2)
- Successful or unsuccessful job application (2)
- Windfall of money or benefit day (2).

7.7.2.4 Personal safety and welfare issues

- Assaulted or involved in fight (8)

My brother had no fixed abode and would sleep anywhere. He had been an abuser of drink and drugs for many years, heroin, methadone and lately cocaine and Valium®. He had

suffered blood clots through injecting and had been in hospital on several occasions and had been prescribed warfarin, although he did not always take it. He was well known to the local police and during an incident 12 days before he died his right arm was broken in three places and was in plaster. I last saw him alive two days before he died and he looked down because of the problems with his arm and he was finding it difficult to dress. He asked me if I could put him up until the weekend, but I had to refuse as this was against the rules of the housing trust where I live. PM toxicology: morphine = 0.62mg/L; alcohol = 810mg/L; diazepam = 0.35mg/L [Coronial file no. 20]

- Victim of physical or sexual abuse (6)

Deceased (female intersex aged 29) had celebrated her birthday with her family on Wednesday and then met up with friends on the Thursday and they all took drugs and drank alcohol throughout the day. Deceased was then assaulted by her drunken partner at midnight on the Thursday night. After this they bought more drugs and alcohol and went back to the deceased's flat and took these. They were planning to go back to the friend's flat but the deceased felt sleepy and decided to remain at her flat. They all fell asleep and when they awoke the next day the deceased was found dead. PM toxicology: morphine = 0.064mg/L; cocaine = 0.07mg/L; diazepam = 0.14mg/L; cannabis positive [Coronial file no. 66].

Deceased (male aged 51) was living with two friends in squalid conditions who were also alcohol and drug dependent. Deceased was drinking continually prior to his death and considered to be more intoxicated (incoherent and paralytic) than usual. He had been away from the flat, busking, for several days and also spent one night in a police cell and on his return he got into an argument and then a fight with his flat mate. Friend hit deceased over the head with a mallet and deceased then fell down a flight of stairs. PM toxicology: methadone = 0.14mg/L; alcohol = 417mg/100ml [Coronial file no. 86]

- Victim of a robbery (3)

Deceased (male aged 21) had recently returned home (thought to be intoxicated on arrival) from an overseas holiday where he and a friend had experimented with many drugs including opium. Deceased had lost his cash card and then had all his money stolen by a woman – so he decided to return home early and planned to surprise his mother with his early return. Once at home he continued to drink alcohol and to take "blue pills". He died alone in the spare room of his home. PM toxicology: morphine = 0.26mg/L; diazepam = 0.10mg/L; temazepam = 0.05mg/L; codeine and phenobarbitone detected. [Coronial file no. 67]

- Death threats or threats of violence or intimidation (2)

(Statement of friend): She (female aged 46) came to see me, sobbing uncontrollably, she told me about the latest beating she had received. I could see that she was suffering from the following injuries – black eye, bruising to the face, body and arms and severe damage to her ribs which hampered her breathing and movement. She also told me that at some point during the argument he threw a knife on the bed and told her to kill herself. I rang the police and told them about the assault and I am aware that her husband was arrested. She often prophesized her own death at the hands of her husband and she made me promise to have any such incident investigated. PM toxicology: morphine = 0.43mg/L. [Coronial file no. 51]

7.7.2.5 Service provider or public sector issues

- Recent release from prison (11)

The years passed and he ended up in and out of jail. The last time he got out, he came straight to see me. He told me he was going to his ex-girlfriends (who sold heroin). He was only 23 and I miss him a lot. My other two friends have died in the same situations, just out of jail and in stairwells. Something more should be done to help these guys onto some sort of programme when they get out of jail. [Narrative no. 57]

- Recent release from psychiatric hospital or general hospital (6)

Deceased (male aged 31) was on leave from a psychiatric hospital, where he had been resident for three months, and supposed to be in the company of his father, but instead went to visit his sister who rejected him and then went to visit two friends. He turned up unexpectedly and was intoxicated on his arrival. They went out shopping in the friend's car, but the deceased remained in the car because he was drowsy and he eventually fell asleep. Later when the friends returned to the car he was found slumped over and not breathing. He was blue in colour. The friends then drove him to the nearest A&E department where he was found to be unresponsive to treatment. PM toxicology: morphine = 0.31mg/L. [Coronial file no. 76]

- Recent release from drug rehabilitation service (2)

- Recent or pending contact with lawyers, police or judiciary (16)

- Problems engaging with service providers (5)

She wanted to get clean but she did not know how to go about it. I got her registered with my GP and asked him to help her. He was just as bad as all the other places. I phoned a rehab place and was told that she needed to phone. She was scared to phone and she said she felt stupid. They did not help. I found an agency that agreed to take her. They assessed her and said she could use their service until a place in rehab became available in the country. They were

helpful, but they could not move her up the list .She continued to use drugs and to steal ... [Narrative no. 36]

Deceased (male aged 43) had attended GP surgery five days before death but was reported to be drunk and vague and was told to make a further appointment. [Coronial file no. 34]

- Exclusion from services (2) or conflict with treating doctors
- On a waiting list for placement in a residential rehabilitation programme (4)
- On a waiting list for surgery (2).

7.7.2.6 Celebrating or commiserating

- Celebrating- birthday or wedding anniversary (5)
 - New Year's Eve, Christmas, Easter (4)
 - Received good news (4) – insurance payout or granted bail

Deceased (female aged 28 from eastern Europe) was raped five months before her death. She had ceased taking methadone 2–3 months before her death but on the day of her overdose, it was her 28th birthday, and while she was cleaning the house she found her husband's methadone and drank 50ml of it and then took some Valium®. Her husband came home and found her lying on the bed and drowsy so he left her sleeping and went off to work. PM toxicology: methadone = 0.76mg/L; urine alcohol = 1.7g/L; diazepam = 0.80mg/L; temazepam = 0.40mg/L. [Coronial file no. 73]

- Commiserating – anniversary of death of loved one (4)
 - Spending one's birthday or Christmas Day alone (3)
 - Attending a funeral and then wake.

7.7.2.7 Recent health issues

One or more recent health issues were noted in 49 (32%) of the 151 cases:

- New diagnosis – HIV, schizophrenia, cancer
- Injury – at work, in fight or whilst intoxicated
- Recent onset of severe symptoms – chest pain (deceased reported he felt like he was having a heart attack), abdominal pain, back pain, shortness of breath, feeling unwell, flu-like symptoms, sudden loss of weight, swollen limb. In the cases where the deceased sought medical advice either no underlying cause was identified, the symptoms were attributed to opiate withdrawal, or the deceased was in the process of getting medical advice or an appointment. In a number of cases the deceased declined to seek medical treatment or the offer of transportation to hospital

(Died alone): The day before she died the deceased complained to her sister over the telephone that she had flu-like symptoms with a high temperature. [Coronial file no. 4]

Deceased (male aged 23) reported to girlfriend that he had been experiencing chest pains in the days prior to death. According to sister, he was a known recreational cocaine user and had been drinking and using cocaine at a night club the night before he died. PM toxicology: cocaine = 2.0mg/L; lignocaine = 10.9mg/L [Coronial file no. 16]

(Hospital notes): Deceased (male aged 53 long-term abuser of heroin and street methadone) was admitted to hospital after collapsing on the street outside his home. He was conscious and able to give staff some medical history. He gave a history of two days abdominal pain and vomiting and past diagnosis of hep B and hep C and admitted to injecting street methadone into his left groin. He had a quiet, grey appearance and was of thin build. After admission he suffered a cardiac arrest and he was resuscitated but his condition steadily declined and a decision was made not to further resuscitate. PM toxicology: methadone = 2.6mg/L. [Coronial file no. 37]

(Treatment agency notes from keyworker): Deceased (male aged 31, recovering heroin addict – as was his partner) was on a methadone script and had ceased using all illicit drugs. Their two children had been placed on the child protection register six months before his death. Leading up to his death he found coping with family responsibilities extremely difficult and in order to raise extra money began to miss clinic appointments saying he had to work. I became concerned for his health, when I saw him after a gap of two weeks as he appeared to have lost a lot of weight. He was referred to a primary care unit and advised to go and get screening.

(Statement of partner): Yesterday evening (day before death) he complained about chest pains and had difficulty breathing and was getting really hot – but refused medical help. He said he would be OK. This morning as I was about to leave to go to the nursery he complained of feeling hot and sweaty. I gave him a bowl of water and a sponge to help him. He said he would try and register with a doctor today. I left and went to the nursery and whilst out I telephoned home to speak with him but there was no reply. I made my way back home and on opening the door I saw him collapsed at the top of the stairs. I checked for a pulse and signs of breathing but there was nothing. I telephoned for an ambulance who arrived shortly afterwards. I then locked our home and made my way to the hospital by bus with my children. I was then informed by the staff at the hospital that he had died. PM toxicology: methadone = 0.96mg/L. [Coronial file no. 41]

(Statement by project worker at hostel): I went to see the deceased (male aged 30, long-term abuser of heroin but recently reducing intake of drugs and alcohol whilst living at the hostel – with a view to detox) in his room as his friend told me he was unwell. He was complaining of back pain believing

that he had slipped a disc in his back. I offered to phone an ambulance on his behalf but he declined because he had no drugs in his system and he didn't want to be in pain with his back and strung out through lack of drugs. PM toxicology: morphine = 0.22mg/L; paracetamol = 30mg/L; amitriptyline = 0.13mg/L. [Coronial file no. 60]

- Severe pain – burn, migraine.

(Medical notes – three days before death): Deceased (male aged 43: heavy cannabis smoker and regular user of cocaine; currently unemployed and no cash) stated he had been getting very bad headaches for the past three weeks and that they got worse when he lay down and would only improve a little when he say up. He described the pain as like “a shotgun going off” in his head. He also confirmed that he had been taking normal headache tablets and that he had made an appointment to see a neurologist (approximately three weeks after death). PM toxicology: alcohol = 248mg/dl; paracetamol = 66mg/L; dihydrocodeine = 15.2mg/L. [Coronial file no. 31]

Deceased (male aged 56, gout, type II diabetes, obesity, and leg ulcers) visited GP three days before death for severe pain in his hand. Was prescribed 100 dihydrocodeine (30mg) and he consumed all of these prior to his death. Prior to this, his wife reported that husband was “popping” a packet of Anadin (32) each day whilst also being a heavy smoker. PM toxicology: dihydrocodeine = 2.52mg/L. [Coronial file no. 83]

- Overdose or series of overdoses requiring intervention and/or hospital treatment.
- Self-harm (cuts to body) or attempted suicide using drugs.

7.7.2.8 Declining health cluster

One or more were noted in 48 (32%) of the 151 cases.

- Testing positive for one or more blood-borne viruses (Hepatitis B and C, and HIV) combined with a progression in the symptoms (hepatitis, cirrhosis of the liver, and renal failure requiring dialysis)
- Recurrent infections, abscesses or ulcers (complicated by MRSA); deep vein thromboses
- Respiratory problems such as asthma, emphysema, pneumonia or tuberculosis
- Cardiac problems (myocardial infarction, endocarditis)
- Progression of existing disease – MS, cancer, rheumatoid arthritis, diabetes
- Problems associated with long-term alcohol abuse- severe pancreatitis, cirrhosis of the liver, memory loss.

Physician: Diagnosis of severe chronic liver disease secondary to Hep B and Hep C viruses – from IV drug use. Three months before death looked unwell and had lost eight

kilos in weight. Patient had developed oedema and a blistering rash. Still injecting cocaine on a daily basis. His liver function tests were deranged. PM toxicology: morphine = 0.08mg/L; methadone = 2.11mg/L. PM pathology: The liver was brown and shrunken with prominent nodules on its surface. The appearances were those of advanced macronodular cirrhosis. [Coronial file no. 22]

He was basically walking up the road in Earl's Court and he just collapsed and died. He had been using it for so long and it destroyed him so much that he couldn't sleep, he couldn't eat solid foods, his veins were all encrusted and he was putting it in the back of his hands, he was putting it in his feet, he couldn't walk. He was officially registered, but he still used the crack so much it was that that killed him. He didn't eat solid foods, he was constipated, his eyesight was bad, his teeth were rotten ...

[Narrative no. 25] Her breathing was getting more and more laboured, she had emphysema and there didn't seem to be any treatment going on. [Narrative no. 32]

Deceased (male aged 47 with history of crack cocaine dependency: diagnosed HIV and Grade 2 Hodgkin's lymphoma – treated) presented at hospital one week before his death complaining of shortness of breath, chest pain and cough. He had stopped taking all medications several months earlier. He had noticed enlarging axillary and inguinal nodes and had night sweats and weight loss. He was treated for possible pneumonia and received a blood transfusion and IV fluids. His liver function was worsening and further antibiotics were administered. The evening he died he was found to be smoking a white powder in a pipe. Approximately two hours later he was found collapsed in his room with red blood vomit all over the walls. He was asystole and despite attempted CPR was pronounced dead. PM toxicology: cocaine = 0.02mg/L; methadone = 0.07mg/L; codeine = 0.13mg/L [Coronial file no. 39]

Deceased (male aged 36, known IDU and alcoholic) was homeless and had been staying with a friend. He had not left the flat for five weeks. On the day of the overdose, the deceased complained of feeling weak and unwell and wanted to go to hospital. Friend left the flat at 4pm and on his return could not get in. With assistance from police and neighbours entry was gained to the flat and the deceased was found lifeless lying on the bed surrounded by needles. Friend knew deceased to be taking heroin but reported that he had not had a drink for three weeks. PM toxicology: morphine = 0.031mg/L. PM pathology: emaciated body; liver congested and mildly fatty (grade 2 portal fibrosis). The lung pathology is a remarkable disseminated tuberculous bronchopneumonia. There is free morphine in the blood (31ug/L) indicating recent administration, but it is below the level associated with acute

respiratory depression, but in a patient with this degree of lung damage it may have contributed to the death. [Coronial file no. 80]

7.7.2.9 Significant past medical history

This was noted in one or more noted in 33 (22%) of the 151 cases).

- Established diagnosis and treatment for: severe depression, anxiety, or panic attacks; paranoid schizophrenia; severe primary personality disorders; history of violent attempted suicide; self-harm; agoraphobia; epilepsy; alcoholism; surgery and/or treatment for gender reassignment; strong family history of early premature death due to heart failure; serious injury from car, work accident or violent assault; and diagnosis and treatment of degenerative illnesses such as MS and rheumatoid arthritis.

(Medical notes from GP): Deceased (male aged 33) generally seen once a week or fortnightly because of his high risk of overdose. He was taken into care age 17 and suffered a serious assault aged 22. At age 24 he suffered from alcoholism and a drug overdose and was diagnosed with a sociopathic disorder. Since this time I have seen the deceased many times drunk and under the influence of butane gas and with a very fluctuating mental state in that he could be happy and chatty one week and take an impulsive overdose the next week. At 24 he suffered a drug-induced paranoid state and was in hospital for seven months. At age 26 he was again sectioned under the Mental Health Act with a diagnosis of impulsive borderline personality disorder, alcohol and sedative dependency, volatile solvent abuse and alcohol and amnesic syndrome. At age 29 he was admitted for detox of alcohol and on a couple of occasions took a couple of impulsive overdoses – this was the continuing pattern. In that year he was finally thrown out by his landlord for aggressive behaviour and was sleeping rough in cemeteries. At this time self-harming behaviour was also noted. At age 31 he was diagnosed with agitated depression and also had a psychotic episode. At age 32 he had another psychotic episode and then was involved in a stabbing incident. He stabbed the landlord's son with a knife and then cut his own wrists. For this he was sent to prison for a year. One month before his death I saw him in the surgery, when he was out of prison and again living with his former landlord. He was drinking but not abusing butane gas. He survived on a cocktail of medication and was reluctant to give this up (dihydrocodeine and temazepam). PM toxicology: dihydrocodeine = 9.8mg/L; alcohol = 330mg/L and butane and benzodiazepines detected. [Coronial file no. 43]

7.7.2.10 Significant past personal history

One or more were noted in 77 (51%) of the 151 cases.

- History of physical or sexual abuse; in a relationship of abuse; successive relationship breakdowns; long forensic history; death of a child or partner or series of deaths of loved ones; or spouse or siblings murdered; past trauma at witnessing the effects of terrorism or a repressive regime; children taken into care or the subject or court orders; estrangement from family of birth or adoptive or foster family; failure of business venture; failure to achieve personal goals; loss of property, and loss or successful career.

(Family member statement about past life of the deceased): He was apparently involved in preparing the bodies of the victims of terrorist activities for the police photographers and this caused him to suffer emotional trauma and to start using drugs. By the time he was in his mid-20's he was an IV user and on one occasion he attempted to take his own life by injecting air into his veins. PM toxicology: morphine = 0.13mg/L; cocaine = 0.30mg/L. [Coronial file no. 2]

Deceased (male aged 31) was brought up in a children's home until the age of six, having been made a ward of the court at birth. He was then adopted and taken back into care at age 11. He was then put in a short-term foster home before going to long term fostering where he remained until he was 17. At this time he had a forensic history with two custodial sentences. At age 23 he was diagnosed with significant depression with suicidal thoughts and he was prescribed fluoxetine (20mg) and referred for full assessment to a day hospital, but due to a lack of attendance he was not able to be fully assessed. He had a six year history of IV opiate addiction and four years before his death he underwent opiate detoxification. PM toxicology: morphine = 0.26mg/L; cocaine = 1.08mg/L. [Coronial file no. 19]

Deceased (male aged 57) was estranged from his former wives and one child because of his long-term polydrug abuse and alcohol problems, and also estranged from his family of birth because his sisters blamed him for the death of his mother and recently he was not invited to attend the funeral of his brother (a celebrity). PM toxicology: morphine = 0.55mg/L; methadone = 0.32mg/L; cocaine = 0.50mg/L; benzodiazepines detected. [Coronial file no. 35]

7.8 Types of drug-related deaths

Ten overlapping clusters of risk were identified but cross-cutting these were the issues of tolerance, overloading, intent to overdose, mishap or injury following intoxication, quality and purity of drugs, the role of confounders (sudden collapse or snoring seen as normal behaviour for the deceased following drug taking) and temporary witness incapacity. (More detail will be provided in subsequent publications.) In keeping with the previous two sections, illustrations are provided from both coronial file and narrative data.

7.8.1 Issues impacting on overdose events

- Tolerance (n=57): The issue of unknown, altered or miscalculated altered tolerance was noted in over one third of the cases (11 were first time usage, developing or recent uptake; 26 were out of prison or custody; three were out of rehab; four were out of hospital; and 13 were attempting to reduce their drug usage because of family pressure or before entering into a treatment programme).

... a 26 year old, only been out of prison a couple of weeks of a sentence of 18 months, done nine months and was out, was clean, was advised not to indulge because he'd been so good, but like just wanted that last hit, just to see what it was like. Sorry to say it was his last hit. He had hep C so there was a few problems in general health-wise. He was living with his girlfriend on the street as well. [Narrative no. 39]

My friend was 29 when he died and bisexual, flitting from relationship to relationship. At the time of his death he was seeing a guy, purely for financial gain, there were no feelings there. He had not long been released from prison and was aware of what not to do in so much as his tolerance would not be the same as when he went away. Earlier in the day I was with him and we used together – heroin – it was a £25 wrap between us. That evening around 6.30 – 7pm he phoned and asked me if I could score for him ... I went out to score and then made my way (to the abandoned building where we had agreed to meet) – to be confronted by police and ambulance men. [Narrative no. 43]

One of my friends came out of detox just two days before I'd seen him, and he came with us for a smoke. Well, not a smoke, like what we usually do. We scored, we were in the car coming back and he was the first to do it and there was no difference in him or anything. We were all looking and talking to him, and like one of my friends turned round and said "Oh my God, look!!" [Narrative no. 47]

He was only 33 and had been using a lot of drugs for a long time. He was just a small thin guy but had really got into injecting pills, and a lot of pharmaceutical drugs – he liked everything and always took a load of stuff – barbiturates, speed, crack, methadone, amps, morphine – just loads of stuff. – he was really knowledgeable about drugs too. Anyway, he had recently been in hospital with a very serious problem – deep vein thrombosis – he had a lot of clots and very swollen legs. I think one clot moved to the lungs and he ended up in hospital in a really serious way. He couldn't even speak, he had to point to letters on a board to make words. We weren't sure if he was going to make it, he was really, really ill. Anyway he did get better, but left hospital only to start using again. I couldn't believe it when I heard it. I just thought – my God you were nearly dead in hospital and you are out using again! Not only that but he was using crack and

smack – injecting them together. He would inject in his groin and he had a bloody big hole there – he really had taken a lot of drugs, for a long time. His girlfriend had died a few years before that and he'd been pretty depressed. I think he'd pretty much given up on things.

Anyway one day I get this phone call from the guy who owned the bed sit he'd been living in. He said my friend was in the hospital morgue and did anyone know his parents' phone number as no one would release his body until his parents signed and identified him. I couldn't help with this – no-one knew his parents, he had hardly seen them as they were both very ill and there was a bit of bad blood going on with his new step-father. [Narrative no. 42]

- Overloading (n=14): Binge use was reported in five cases and increasing usage (chaotic or spiralling out of control habit) was reported in nine cases. For example:

He died on a Sunday but it all started I think when he went out on Thursday night, and I imagine between the Thursday and the Sunday he would probably have drunk about 50 pints of beer, maybe a couple of bottles of vodka as well. I know he took ketamine, I know he took over – at least over 20 ecstasy pills, I know he spent a couple of hundred pounds on crack cocaine and some kind of cocaine, smoked a bit of dope, took some benzos and that was pretty much it. [Narrative no. 44]

Deceased had received an insurance payout for a serious assault/stabbing and reported he had "money to burn". He went on a drinking and drugs binge over three days. He was observed drinking a considerable amount of alcohol and taking Ecstasy, crack cocaine and heroin just prior to his death – to come down. PM toxicology: heroin = 0.28mg/L; cocaine = 2.6mg/L; MDMA = 91ug/ml and alcohol = 870mg/L. [Coronial file no. 49]

- Intent to overdose (n=21): In 14 cases the death was deemed to be a suicide at inquest (intent communicated or note left) and in seven cases the deceased had communicated a lack of care for their own well-being.

The things he said for a while leading up to ... things that family and friends should have picked up on, including the last thing he said when he left the pub on the evening before taking the overdose, which people didn't take much notice of at the time, but his exact words were "Arrange my funeral tonight". [Narrative 44]

Deceased (male aged 26) forms a suicide pact with a male friend and tells his brother of his intent, but brother does not believe it is a cause for concern as he has heard this before and nothing has happened. Friend survives the suicide pact and calls for help. He is found by police in time but the deceased has already died. PM toxicology: cocaine = 1.44mg/L, alcohol = 1050mg/L MDMA positive. Antecedent

events: death of a close friend, parents moving overseas, relationship breakdown with girlfriend, need to gain extra qualifications to stay in current job, brother told of plan but disregards the warning. [Coronial file no. 82]

- Mishap or injury following intoxication (n=6): Following intoxication there were two cases where the victims drowned in canals; one case of hanging following intoxication; one case where the victim fell asleep next to a faulty gas heater and died from carbon-monoxide poisoning; one case where the victim went on a rampage following cocaine ingestion and suffered serious head injuries; and a final case where the deceased fell whilst intoxicated and later died from the head injury.

(Juror at an inquest): His toxic reports suggested that he had lots of drugs in his system, they said, methadone and heroin and some other drugs, but I don't know the names. They also said that the levels were high and in all probability the cause of death, and that he must have collapsed on the train tracks and then the train hit him. [Narrative no. 45]

Done too much crack and he was in the toilet ... he's fallen forward and his head has gone into a bucket of water and his head was under for so long that the water deprived his oxygen and brain for a few minutes before the ambulance people or anybody realised his head had been in the water. [Narrative no. 30]

One day he done it near a bridge and took an overdose and fell over the bridge. The doctors said he died of an overdose of crack and heroin. [Narrative no. 16]

- Quality or purity of the drugs (n=1): Only one case in the coronial files was noted involving contaminants – where the cocaine was cut with lignocaine (not discovered until PM toxicology), but several narratives described overdoses involving “cut” drugs or instances where the drug is believed to be stronger than usual. For example:

The fact that he did overdose was because he'd come out of prison and the stuff was a lot more pure than what he was used to. [Narrative no. 18]

He died 'cause the heroin he had procured for himself had been cut with barbiturates. He must have had his usual hit but because of the “barbs” – it was too much. He wasn't on a script and he'd only been out of prison three weeks. He'd only been in jail for a month for fines or something. [Narrative no. 43]

The strength of the bag was very weak as the stuff was cut and as they smoked it, it produced a thick black trail ... Either way it was “weak” or “cut” gear that killed him. [Narrative no. 59]

- The role of confounders (n=6): In these cases the deceased is known to collapse suddenly or snore very loudly following the

ingestion of drugs and it is not taken to be a cause for concern or sign of trouble necessitating intervention.

He was OK for about 20 minutes, and then he just collapsed on the floor. And when he collapsed at first we didn't realise he was in trouble. And then we realised when he was turning blue, he was, he was obviously in severe trouble, and he wasn't breathing. [Narrative no. 40]

Later on in the night we went into the room because we didn't hear from him or nothing in the room and he was lying on the floor. We didn't take notice because he had his works by him so we thought he had done his brown after his pipe. We didn't think he could be dead it just looked like he was sleeping. [Narrative no. 14]

- Temporary witness incapacity (n=5): In these cases the witness either panics or is distraught at seeing their partner or friend in trouble and does nothing for a period of time, or, as in two cases they suffer an asthma attack or experience stuttering and are temporarily unable to assist in resuscitation or call for help.

The ten overlapping clusters of risk are as follows:

- Novice, developing, or resuming the habit users (n=12) with unknown or altered tolerance. These individuals may be experimenting with new drugs, using for the first time, using new combinations of drugs or a new method of intake – typically a shift from smoking to injecting. Resuming the habit users were people who were abstaining from using because they were temporarily staying with a relative or had family members such as children on access visits, visiting them. For example:

There was a certain time when there was no gear about ... no heroin in the area and if there was stuff there was very little ... and because of the lack of heroin – no matter how much he smoked it – it wasn't doing him any good – so that's how he started to inject. [Narrative no. 3]

Deceased (male aged 38) had been off drugs for about a year – but was observed to be intoxicated and hallucinating the day before his death (unsteady on his feet, speech dragged out, all smiling, and his eyes looked like they were going to pop out of his head) but when questioned by a friend he denied drug use and claimed he had been drinking. Seen snorting powder a few times the night before he died and needle track marks found at post-mortem. PM toxicology: morphine = 0.22mg/L; alcohol = 0.12 g/L [Coronial file no. 38]

Deceased (male aged 24) had recently moved back home in an effort to reduce/abstain from using drugs as he had been living next to a crack house before and had been smoking crack regularly. He was now attending a treatment clinic. The day before his death was Mother's Day and his terminally ill mother had just come home from hospital for the celebration.

The deceased had told friends he was feeling a bit low because of his mother's condition. PM toxicology: cocaine = 0.42mg/L [Coronial file no. 46]

Deceased (male aged 22) had commenced using heroin and other drugs two months before he died. He was believed to have been a recreational cocaine user prior to the change in habit. Found dead at home by a neighbour. He had a pipe next to him and syringes and other drug paraphernalia. PM toxicology: morphine = 0.27mg/L. [Coronial file no. 89]

- Concealed users (n=39) and storers (n=3): those who are endeavouring to conceal their drug use due to family pressure to abstain or disapproval of drug taking, or the need to comply with court orders or institutional regulations in hostels or the rules of drug treatment services to ensure continuity of a methadone script. In a small number of cases both family members and treating doctors were unaware of the deceased's drug use. The concealed storers were a cocaine drug mule with a burst condom, a recreational user who was arrested and swallowed a wrap of drugs ('mini-packing') after arriving in the custody suite, and a person recently released from prison and at post mortem was found to have a wrap of heroin concealed in his rectum. The issue of partial concealment was also problematic for known drug users. In these instances the deceased does not tell anybody that they have already been using that day and friends/associates assume that it is their first intake for the day. For example:

The deceased (male aged 33) was a bit of a shy bloke, not very outgoing and he liked his music and sport. He told me that he used to have a drug problem – heroin. I got the impression that he was off all drugs and I assumed he was "clean". I was aware that he took a bit of cocaine before he went out – I think probably three or four times in the year that I knew him. I had never seen him inject any drugs and I had never seen him use a tourniquet. I found him on his bed and I saw some blood on the side of his face and he appeared very pale. He looked a bit like a shop mannequin. PM toxicology: morphine = 0.072mg/L [Coronial file no. 48]

But little did I know beforehand she had some Valium® and had been drinking. There was me, I just assumed that it was her first, you know since she came out. Obviously it wasn't ... and so yeah, she died. She'd been out of jail less than, I think it was that actual day, maybe two days. I think it was the actual day though. [Narrative no. 6]

- Recreational risk-takers and dabblers (n=12): those who typically use only on the weekend at clubs or raves, or whilst on holiday abroad, or celebrating. Two users who were employed in a professional capacity also concealed their drug use from senior employers and family, but not necessarily from friends or junior work colleagues who also used drugs recreationally.

- Psychiatric comorbidity (n=57): Users with mental health issues, for example those diagnosed with paranoid schizophrenia, personality disorders, severe depression, and anxiety and panic attacks and for whom compliance with script medication may be an added issue.

But what I didn't know was he was not taking his tablets as he was meant to, he was just taking them sporadically ... and ... he'd taken these schizophrenic pills that morning and he'd also taken diazepam which I didn't know about – which if I did know about I don't think I would have let him have a hit [Narrative no. 1]

- Physical comorbidity (n=36): Users with declining health status who have recently been diagnosed with a new condition or experienced a sudden decline in their general health, or progression of a pre-existing condition to a terminal illness.
- Marginalised environment users (n=90): Users who use drugs in a public setting or the home (or hostel or hotel room) of a drug-using associate, and who may also occupy a marginalised position in the community, for example the street homeless, roofless, sex workers, buskers, beggars and illegal immigrants. For those using in public settings (such as alleyways, cars, graveyards, public toilets, disused buildings, building sites, squats or drug dens), the lack of lighting or dim lighting may hinder witnesses observing signs of trouble. Also, ambulance access to patients at such sites was often problematic due to their isolated nature, and access at night problematic for ambulance services at sites such as graveyards or squats. For those using in the home or room of a friend or associate, issues related to witness capacity to intervene if witnesses present were intoxicated, lack of knowledge about the deceased's drug use or exact location of the overdose scene. Issues relating to calling an ambulance or removing a body from the overdose scene to the street or stairwell, if one of those present had supplied (or scored) drugs for the deceased, also impacted on the willingness of a witness to remain to attempt CPR or call for help if they thought the police may also attend with the ambulance crew. Other groupings identified with a more uncertain or isolated status were tourists, international students, or people who were recent arrivals to London and unfamiliar with the language, emergency service protocols or location of public telephones.

(Police witness statement): He was a white male of approximately 30 years of age. He had a very rough and dirty appearance. His hair was greasy and unkempt and he was unshaven. His clothing was dark and ill-fitting. The male was very thin. He was found dead crouching under some scaffolding on a building site, after apparently having gone in there to shelter from the rain. He was surrounded by

paraphernalia of drug abuse, syringes etc. PM toxicology: cocaine = 0.66mg/L; morphine = 0.8mg/L; methadone = 0.50mg/L; benzodiazepine positive. [Coronial file no. 8]

Deceased (male aged 36) had arrived at the squat the previous evening at about 9pm. A short while later the deceased went into the bedroom. At about 3.30 am the girlfriend and another friend found the deceased on the bed and noticed he was not breathing and was cold to touch. The police noted there was no electricity in the flat. PM toxicology: morphine = 0.20mg/L; benzodiazepine positive. [Coronial file no. 71]

Deceased (male aged 37) was living in his camper van on an industrial estate. He was divorced and had lost his job as a builder and then lost his rented accommodation because of his dog. He had met up with an old friend the night before his death and they had gone to the pub and been drinking and then continued drinking back at the campervan. Deceased had then purchased drugs, but not taken them in the presence of his friend. He left the van for a period of time and on his return fell asleep and was snoring loudly. He was found dead in the morning by his friend. PM toxicology: morphine = 13mg/L; cocaine = 1.4mg/L; alcohol = 550mg/L. [Coronial file no. 91]

Deceased (male aged 64) was reported to have collapsed in a crack den and was found collapsed on the pavement outside the railway station. There was a rucksack and a pair of crutches nearby. He was found by bystanders and no-one knew him. He was pale, cold and sweating profusely. He was unconscious and unresponsive to pain and paramedics gave him a Glasgow Coma Score of three. The heavy traffic in the area caused a delay in the ambulance getting there. PM toxicology: cocaine = 0.34mg/L. [Coronial file no. 102]

- Release or discharge (n=33): Users and ex-users recently released from an institution such as prison, hospital or residential rehabilitation programme and where altered tolerance and the temptation to use “just one more time” are issues.
- Use in institutional setting (n=20): Users admitted to hospital who conceal their existing drug use prior to admission may not be suspected of having taken drugs and the treatment of presenting symptoms i.e. septicaemia or pneumonia may take precedence. Once admitted to hospital users may be prescribed methadone, but if already on scripts they may then have access to two sources of methadone if friends visit with a supply from home or the patient may be accessing other drugs on top of the hospital supply. Drug users may also present problems for hospital staff if they are chaotic users and non-compliant with hospital routines and rules. Users taken into custody may also take drugs prior to arrest or conceal drugs they have in their possession by body packing.

(Hospital notes): Deceased (female aged 23; heroin and crack user; homeless and estranged from family; recently moved to London and working as a prostitute, admitted to gynaecology ward for treatment for asthma problem). Deceased frequently left ward to smoke and drink beer and seen in hospital foyer begging and drinking alcohol. Patient thought to be depressed and had a history of deliberate self-harm and attempted suicide. Deceased was afraid of withdrawal and upset that she wasn't receiving enough methadone. She was non-compliant with her medication. Patient was given more diazepam and another 10mg of methadone. Partner also found in patient's bed and asked to leave ward. Deceased had an argument with her partner [on the night of the overdose] and they both left the ward still yelling at one another. Partner came back later looking for deceased. Security alerted and security guard returned to ward with patient in a wheelchair. Patient was then given 20mg of diazepam, 20mg of temazepam and 20ml of methadone. Guard was asked to stay with patient in case the partner returned. Patient was viewed 45 minutes later from a distance and thought to be sleeping – sitting upright – her normal position of sleeping.

(Statement of security guard): Took patient back to ward in a wheelchair. She telephoned someone to ask for cigarettes and something to drink. She then asked nurses for her medication – which she took and she then went to look for her beer and hassle the nurses about her beer. She counted her money on another bed and then fell asleep. Doctor came by and asked how she was – at the door. She was snoring very loudly. She came up every now and then and then went back to sleep. She then stopped breathing and then she started breathing again. Fifteen minutes later she stopped breathing again and I went to get the nurse – but she didn't believe me. Eventually she went to the room. When she got there she called the patient twice and then pushed the alarm. We picked the patient up (who was slumped over) so that she could be laid on her back. Her face was full of brown vomit and she was all green, yellow and blue. The nurse told me she was dead. Again I asked what I could do and she asked me to do compressions on the patient's chest. As I did this another nurse came in and still they didn't know what to do. Finally the doctors came. I walk away to get out of there. The patient died! PM toxicology: morphine = 0.11mg/L; temazepam = less than 0.4mg/L; diazepam = 0.26mg/L; oxazepam = 0.24mg/L; desmethyldiazepam = 0.20mg/L NB: No level for methadone or alcohol reported. [Coronial file no. 63]

- Susceptible users (n=45): Users who are “vulnerable” or “in the zone” (intoxicated and disregarding personal safety) and at high risk of increasing drug use due to the experience of emotional (n=18) or physical pain (n=27), for example, from

grief, despair, severe depression, or recent injury (beating, fractured limb), progression of the symptoms of a chronic illness or verbal and physical abuse. This may lead to a diminished perceptions of risk and care for personal wellbeing.

- Users “doing the usual thing”(n=35) (for example, scoring and sharing, and using and then falling asleep or going to bed) and where no reported clusters and convergence of antecedent events precedes the drug taking.

It happened on a Sunday night ... both of us had gone out and done the usual thing ... [Narrative no. 11]

And then we both ended up going to nap after that (injecting). I woke up and she was dead ... there was nothing I could do. [Narrative no. 8]

We was doing what we normally do at weekends – raving and going to party. We only used to do one “E” a night just to have a good time. I didn’t know but my friend bought another “E” from a man at the party and took it. [Narrative no. 15]

7.8.2 Issues arising from the narratives, witness statements and reports

The following issues for discussion emerged from the qualitative analyses. In summary, they are as follows:

7.8.2.1 Signs of trouble

The need to expand the “signs of trouble” noted (as described in current literature) to encompass a fuller list of possible signs for both respiratory depression and stimulant deaths; to take into consideration the differences in skin colour with respect to skin colour signs; to consider the difference in skin colour signs for those with declining health and to consider the “confounders” described (i.e. where collapse or loud snoring following intake is treated as normal for the subject and not a sign of trouble).

Respiratory depression signs (reported prior to overdose occurring)

Early signs of prior intoxication:

- Drowsy
- Slurred speech or mumbling or incoherent speech
- Unsteady on feet
- Nodding off or gouching, but coming around without help

Signs of overdose:

- Nodding off or gouching but time unconscious increases
- Loud snoring or heavy breathing
- Head hunched over
- Body slumped over
- Needle or tourniquet *in situ*

- Collapsed on floor or over furniture
- Unable to be roused by shaking, prodding or tickling
- Body lying awkwardly
- Not moving or seen to move for a while
- No response to conversation or shouting
- No response to stimuli such as slapping, thumping chest, inflicting pain or splashing with water

Body signs and functions:

- Eyes open – pupils pin-point
- Eyes closed or eyes rolling back
- No breathing
- No pulse
- Mouth may be open
- Vomit, blood or mucous around mouth, nose or pillow
- Evidence of loss of bladder control
- Altered skin colour – pale, blue, purple, grey – peripheries may be different colour to main body
- Body temperature changes – peripheries may be cold but body still warm
- Body stiffness

Stimulant signs:

- Reporting being hot/thirsty/sweating
- Agitated and running around
- Restless and twitching or moving weight continually from one foot to another
- Hallucinating and delusional
- Giggling and or inappropriate “silly” behaviour
- Fitting or spasms
- Hitting head on glass/ car windows or walls
- Sudden collapse and cessation of breathing (sometimes without any other signs).

Effective and ineffective interventions: There was little evidence of ineffective interventions such as injecting saline or immersion in a cold bath, but the use of slapping or punching to determine the level of consciousness or walking around to keep the subject conscious was frequently reported. However, the prioritisation of attending to the victim or calling for help or services appeared to be an area of confusion for witnesses. Similarly, witnesses unsuccessfully attempting CPR often considered they were at fault and there was only one instance, in all of the 151 cases, where a witness was given positive feedback as to the appropriateness of the interventions they had attempted. The issue of efficacy of CPR is unclear as are the

expectations of those trained in CPR as to the likelihood of success. It may be important to those who have tried but failed to save a life to know that their attempts were worthwhile lest they decide to not intervene should another opportunity occur for them to do so.

Luckily I have completed a course on resuscitation and gave her mouth-to-mouth. After about four breaths she gasped and regained consciousness. [Narrative no. 56]

... his lips have all gone blue and his face has all gone red and he looked like he was swallowing his tongue so I slapped him, just to see if he gained consciousness and he didn't and it was like he was dead. So I slapped him and stuff like that to try and get him to come to, but he didn't. Called an ambulance and while I was waiting for the ambulance to come I was trying and trying and he was all blue. And then in the ambulance – they stuck a needle in him – and then in three or four seconds he was like gasping ... [Narrative no. 49]

And anyway I've never sort of really been around a situation like that so I tried to slap him around the face to revive him but that didn't really work, the person who owned the actual flat told me to put him out on the street and phone an ambulance. I wasn't having any of that, I wasn't going to do that so I tried to revive him but he wouldn't come through. I chucked a bucket of water over him, slapped him round the face, anyway, err, there was massive panic then a friend of mine phoned the ambulance and err we just got in the car and just left. [Narrative no. 12]

... we tried shaking him and pouring water on him but he didn't respond. I said to my friend that I would call 999. He said don't – the police will come and we tried again, this time giving mouth-to-mouth, but nothing happened. Then I just said look I am calling 999 and did. [Narrative no. 61]

7.8.2.2 Residual effects on witnesses

- Positive effects for witnesses who were also users – as a catalyst or wake up call to change their own drug using behaviour to either seek help or to reduce use or change to smoking rather than injecting

As for myself, what I took from this was that I needed help, I battled with myself for months wanting help but not knowing where to start, I didn't know where to go, what to, I just knew I didn't want to end up like my friend, dead, as I am about 20 years older than her my time's running out too. [Narrative no. 17]

Myself, I ended up stopping through the fear of what I had seen and knowing what could happen. In the end her partner literally stopped using the next day himself and got himself onto a programme. [Narrative no. 13]

There was a lady in there (in the drug den) who was pregnant, she was about seven months pregnant and she was injecting and it just made me feel sick and that was where I first decided that I couldn't keep taking this stuff. (Following the death of a friend who had just come out of prison)

I didn't really know him that well but that's when I decided I was never going to inject again and that's as I say. I've not injected since ... and ... I'm just ... well I'm trying to beat it myself right now and with a bit of luck I'll be going to rehab soon, but I've not been injecting – only smoking but it's just as bad I'll be honest with you but you can't die from smoking heroin. [Narrative no. 18]

- Negative effects for witnesses – destabilisation of personal circumstances and psychological well-being, need for support or counselling due to grief, self-blame, shame, haunting, anger or fear of facing relatives or friends and conveying the news or being blamed for the event. The relevance of this is that the death of a friend or relative may provide an opportunity for introducing drug users to services.

So that was a new experience for me. Which I would never, ever like to go through ever again. Because to this day I still get visions, it's imprinted in my brain. Like in my flat and I, on me own, I can still see him, lying on the floor, dead. It's not nice. I've even had to apply for a transfer, to get out of that flat. I've been sleeping on the streets, because I don't like going into the flat on me own. Cos every time I go into the flat, all I can see is my friend's dead body just lying there, and it upsets me. [Narrative no. 2]

And her family made it hell for me to stay in my flat, they, because they blamed me for killing her. And I was so scared ... cos everybody kept calling me a killer ... I didn't kill anybody ... [Narrative no. 7]

This is something that I will have to live with because you don't forget and when you remember good that scared feeling comes back. [Narrative no. 14]

I have heard he still hasn't gotten over it even though he is in another relationship he has nightmares of the day it happened, most nights. [Narrative no. 17]

I only met the woman once – I don't even remember her name, but I can not help thinking what if, what if ... I still feel guilty about her dying. [Narrative no. 24]

I just feel so ... like I feel , I really feel like a failure ... I feel hurt by what happened. That was two years ago and I'm still suffering from it now. I just, you know, something happens or whatever and I still see his face ... [Narrative no. 47]

We still feel so guilty because we didn't know what to do and the experience I will never forget. When I play it through my mind it hurts. [Narrative no. 50]

7.8.3 Fear and misunderstanding of the formal process

- Fear of questioning by police
- Fear of arrest for possessing drugs or supplying drugs to the deceased
- Fear of arrest and inability to access drugs in custody so withdrawal is likely to be experienced.

Their response was apparently just to freak out completely because somebody in the flat was dealing and their main concern appeared to be to get rid of the body. [Narrative no. 28]

He had to leave because he was carrying and nervous they were going to get nicked and stuff like that. So they left there – and ten minutes later the ambulance did turn up and he was taken into hospital and there he stayed in a coma for ten days. [Narrative no. 39]

... and when the ambulance people arrived they called the police and my friend was arrested on suspicion of supplying a class A drug. He was kept at the police station for two nights and three days, a standard policy for an opiate addict because the police like to extract information from suspects experiencing “cold turkey” because they are in pain and vulnerable. [Narrative no. 59]

- Fear of court appearance and having to give evidence
- Misunderstanding of the court procedures – all witnesses, including police and medical staff attending to the deceased must give evidence before the coroner and be accountable for their actions or inactions and not understanding the role of the inquest
- Misunderstanding of how the verdict, cause of death or pronouncing of life extinct are determined.

The verdict came back, death by misadventure. D’you know what I mean? And there was even, the time of death that was mentioned was not when he died in my flat, it was ... actually at the hospital. They didn’t say he was dead on arrival, which he was, d’you know what I mean.

The main thing I was scared about at the coroner’s inquest was the fact that his family might be there, and I really didn’t want to face his family. [Narrative no. 2]

7.8.4 Drug culture issues

- Evidence of involvement in crime among a group of users was noted; that is dealing, stealing and sex work to support their habit and the chaotic nature of the lives of such individuals posed unique problems for them and this was often compounded when they needed to access the healthcare system

... he started going out nicking lots of things and then selling them to feed his habit. He was doing this every day. He was so depressed. He went out one day to go nicking to feed his habit. He sold the things he got and bought crack and heroin and then injected ... he went out at least six times and in them six times he was getting at least £300 and injecting all of the money he was really depressed ... [Narrative no. 16]

Deceased (male aged 37) died alone and was surrounded by the evidence of drug taking and drug dealing (tablets, powder, rocks and scales and £18,500 in cash). [Coronial file no. 81]

- Scoring and sharing as a group activity with both positive (only one person to buy drugs on the street and secure a good deal /safe drugs) and negative (aspects for the individual, however current strategies target/emphasise individual behaviours rather than considering the group dimensions of sharing drugs amongst friends or associates or use of drugs in dens and crack houses

(After scoring) ... there was about £100 worth, so we was doing it for quite a while ... [Narrative no. 9]

- Establishing drug quality and purity emerge intermittently as factors to be considered- especially after release from a long prison sentence or during times of a shortage of a particular drug and where users change usage patterns
- The culture of excess and use in a group setting – binges, drug dens, running “big scripts” was noted and the large amounts of drugs being consumed was a topic of interest and specific details of drug and alcohol use reported in considerable detail as well as the reputations for high tolerance held by specific individuals in London

This one particular evening there was a real binge going on and people were injecting heroin and coke and probably drinking and smoking and everything else, somebody overdosed and died. It happened in the evening, sort of late evening, but the guy just lay on the sofa all night and nobody realised that anything was amiss until the next morning ... [Narrative no. 28]

7.8.5 Public sector responses

- Attitudes of service providers to drug users that are patronising or based on stereotypes (i.e. sad inevitabilities or stupid), whereby they are either shunned or discouraged from attending because they have been problematic in the past and may upset other patients or they are treated or “processed” in the same way as all other patients and required to see the practice nurse first to give a full history and then able to request an appointment rather than treated at the point of need
- In four cases it was noted that the subject was waiting for a placement in a rehabilitation or detoxification programme

- Enforcement of rigid rules or protocols (i.e. the drug user must make initial contact with the service rather than a friend or relative and the rule of no relationships with others also in the same treatment programme) that deter subjects from seeking help in the first instance or returning after an unsatisfactory encounter with those running the programme
- Non-recognition of crisis and critical situations by hospital and treatment agency staff or reluctance to assist in resuscitation if the patient was a known drug user were noted in the data. In one case (already described) the deceased died following the death of his sister from an assisted hit given by his girlfriend and then the girlfriend also overdosed. The deceased was reported to have been last seen begging to get into a treatment programme, but was refused a place and then was found in the canal two days later, having drowned

Hostel workers declined to perform CPR because they knew the deceased (female aged 39, sex worker, IDU) was a drug user. They got a security guard to call for an ambulance. [Coronial file no. 110]

Deceased (female aged 25) lived alone in a hostel and was expecting a visit from her mother on the day of her death. When the mother arrived and there was no answer at the door, the mother went to the hostel office and got a worker to open the flat door. Deceased was found collapsed in the bath and believed to be dead. No initial attempts were made to resuscitate the deceased or remove her from the bath. Workers cited fear of infection as the reason for not touching the body or giving mouth-to-mouth because she was a known drug user. [Coronial file no. 145].

8 Conclusions on opportunities for preventing overdose death

Qualitative data from inquisition files and overdose stories were analysed by both the academic team from Imperial College and the expert panel of drug users. Conclusions from these analyses indicate opportunities that might exist to prevent overdose death. Many of these are opportunities that depend on improved communication between drug users. Drug users may share drugs as expressions of friendship but sharing norms may block communication about recent use and tolerance levels. In a few cases, drug users have resuscitated an overdosing friend but because they did not explain what had happened, their friend used again, fatally. If an overdose happens, drug-using friends and associates will only be able to assist if they are checking on each other regularly and thoroughly and know what to do if specific vital signs are missing. For these reasons, drug users need to stay together while they are high, get CPR training, be aware of their location and have access to a phone should they need to phone emergency services. Drug users could use phone

line advice on what to do after a non-fatal overdose, how to provide CPR and safe check-in calls for those using alone or without a straight guardian.

Drug users continued to express fears about dealing with ambulance crew and the police and about the processes of giving statements and going to coroners' courts. Often, they simply wanted more information about the procedures, or wanted to know where they stood for example on the legal ramifications of assisted injection or having supplied drugs implicated in overdose death. They were keen on detailed rather than conceptual information such as that given to liberated prisoners on reduced tolerance. They sought advice that would help them assess risk over advice that was abstinence oriented. For example, they wanted to know which drugs were most dangerous in combination rather than simple advice against mixed use. Critical comments were made about joint working arrangements with a "blame culture" identified between prison and probation services in particular. There was also some dissatisfaction about support for carers, chaotic users, mentally ill users, and for bereaved family and friends.

8.1 Conclusions and implications for treatment

The quantitative description of the drug-related deaths provides a familiar picture, reported by other audits in the UK and Australia:

- The majority of deaths were in subjects with a history of opiate use and drug dependence; and drug-related deaths are on average older and more likely to be male than problem drug users in treatment or in the population.
- Toxicology reveals extensive polydrug use prior to death.
- It is not always clear which drug or combination had a role in the death, and we will report on the pathology or mechanism of death in a subsequent paper.
- Equally, the range of drugs may not be fully captured by the drugs mentioned on the death certificate, potentially limiting the use of routine mortality statistics to monitor the type of drug-related death.
- In contrast to other audits, there was a high number (and proportion) of deaths with a positive cocaine toxicology in London (which will be the subject of a separate small report). Instantaneous death was rare, and in the majority of occasions a witness was present at or immediately before the time of death.
- Further, contact with services was considerable in the time before death, and the majority of subjects may have experienced a significant event prior to their death.
- In approximately a third of the cases there was evidence of recent release from prison or current substitute prescription.

The qualitative data from inquisition files and overdose stories gave a complex picture of the antecedent events and immediate circumstances prior to death.

- Witness capacity was reduced because of their own state of consciousness, lack of knowledge of drugs used by the deceased, lack of attention or failure to recognise warning signs.
 - In the majority of deaths significant health or social events (such as relationship breakdown, the death of a relative, accommodation issues) were noted which may have contributed to the subsequent fatal overdose.
 - Clearly, this study cannot attribute causality and chronic health and social problems is a feature of many problem drug users life. However, it would be worth testing whether the deceased experience more problems prior to death and considering how services might better identify and manage these chronic problems and its potential in preventing drug-related death.
 - We described at least ten types or clusters of drug-related deaths, which often overlapped, because of the multiplicity of circumstances and complexity of the deaths. These included deaths where the risk of death involved concealed drug use and resumption of drug use after a period of abstinence.
 - Drug users continued to express fears about dealing with ambulance crew and the police and about the processes of giving statements and going to coroners' courts.
- Written information on all drugs should be available in all languages
 - Information about drug purity or a regulated system of drug standards, and advice on drug combinations
 - Support for carers: of chaotic users; mentally ill users; and for bereaved family and friends.

This data implies prevention should consider addressing the management of chronic health and social problems, as well as witness capacity, and the drug taking culture and environment. The loss of an opportunity for prevention often involved a lack of communication and “duty of care” between drug users. In a few cases, drug users have resuscitated an overdosing friend but because they did not explain what had happened, their friend used again, fatally. If an overdose happens, drug-using friends and associates will only be able to assist if they are checking on each other regularly and thoroughly and know what to do if specific vital signs are missing. Consideration should be given to campaigns that raise awareness of signs of overdose, but also seek to encourage a shared responsibility or “duty of care” for other drug users. However, several deaths occurred in sites that militate against any effective monitoring or alerting the ambulance service, where any intervention needs to address and remove these hazardous injecting environments (for example, through considering supervised injecting rooms).

8.2 Further expert group comments

Additional recommendations were made independently by the expert drug user group. These included:

9 Bibliography

- Darke, S. & Hall, W. (2003) Heroin Overdose: Research and Evidence-Based Intervention. *Journal of Urban Health*, 80, pp.189-200.
- Darke S and Zador D (1996). Fatal Heroin 'Overdose': A Review. *Addiction*, 91(12), pp. 1765-1772.
- McGregor C, Ali R, Lokan R, Christie P and Darke S (2002). Accidental Fatalities Among Heroin Users in South Australia, 1994-1997: Toxicological Findings and Circumstances of Death. *Addiction Research and Theory*, pp. 335-346.
- Zador D (2001). Circumstances and users' perceptions of heroin overdose at the time of event and at one-week follow-up in Sydney, Australia: Implications for prevention. *Addiction Research and Theory*, 9.
- Zador D, Sunjic S and Darke S (1996). Heroin-Related Deaths in New South Wales, 1992: Toxicological Findings and Circumstances. *Medical Journal of Australia*, 164, pp. 204-207.
- Best D, Man Lan-Ho, Zador D. (2000). Overdosing on Opiates – Thematic Review: Part 1, Causes. *Drug Alcohol Findings*, 4, pp. 4-20.
- Gossop M, Stewart D, Treacy S and Marsden JA (2002). A Prospective Study of Mortality Among Drug Misusers During a 4-Year Period After Seeking Treatment. *Addiction*, 97, pp. 39-47.
- White, J. & Irvine, R. (1999) Mechanisms of Fatal Opioid Overdose. *Addiction*, 94 (7), pp.961-972.
- Hulse GK, English DR, Milne E and Holman DJ (1999). The quantification of mortality resulting from the regular use of illicit opiates. *Addiction*, 94, pp. 221-229.
- Darke S, Sunjic S, Zador D & Prolov T (1997). A comparison of blood toxicology of heroin-related deaths and current heroin users in Sydney, Australia. *Drug and Alcohol Dependence*, 47, pp. 45-53.
- Tagliaro F et al (1998) Death from Heroin Overdose: Findings from Hair Analysis. *Lancet*, 351, pp.1923-5.
- Warner-Smith, M et al (2001). Heroin Overdoses: Causes and Consequences. *Addiction*, 96, 1113-25.
- Drummer. *The Forensic Pharmacology of Drug Abuse*
- Randall C. Baselt. *Disposition of Toxic Drugs and Chemicals in Man: Toxicology Levels*.
- Cook S, Moeschler O, Michaud K and Yersin B (1998). Acute opiate overdose. *Addiction*, 93, pp. 1559-1565.

10. Income: Working for wages
 Unemployment benefits
 Crime/ dealing
 Independent means
 Begging
 Conflicting information
 Unable to be determined
- 11a. Usual type of accommodation: house/flat
 hotel/hostel
 street homeless
 roofless
 unable to be determined
- 11b. Time at this accommodation: permanent address
 transient – under two weeks
 short term – under 12 months
 long term – under 5 years
 unable to be determined
12. Most usual living arrangements: alone
 with others
 unable to be determined
13. Relationship status: in a relationship
 unattached
 unable to be determined
- 14a. Deceased had children in their care: yes no unable
- 14b. If yes, how many children?
- 15a. Last contact with friends/family: within 72 hours of death
 in the last few weeks
 in the last few months
 in the last year
 not for a few years
 unable to be determined

SECTION B – HISTORY OF DRUG USE

16. Pattern of drug use:
 dependent/long term
 recreational
 novice
 unable to be determined
- 17a. Type of illicit drug usage:
 Heroin
 Crack
 Cocaine
 Street methadone
 MDMD/MDA
 Meth/ amphetamine
 Other(s)

17b. Other drug usage:

- Alcohol
- Benzodiazepines
- Cannabis
- Tobacco

17c. Known IDU: Yes No Unknown

18a. History of overdose: Yes No Unknown

18b. If yes, how recent? Past week
 Past month
 Past year
 More than a year ago
 Unable to be determined

19. Therapeutic medications prescribed at time of death:

Methadone Yes GP Rx Unknown Dose:

Benzodiazepines Yes GP Rx Unknown Dose:

Dihydrocodeine Yes GP RX Unknown Dose:

Others of note:

20. Recent change in pattern of drug usage:

- Resumption after abstinence
- Change of route of administration
- Change of venue
- New drug tried
- Poly drug usage
- Increasing usage
- Decreasing usage
- Change not noted

SECTION-C-CIRCUMSTANCES OF DEATH

21. Coroner's statement of circumstances of death:

22a. Witnesses present: Yes No – died alone Unclear

22b. If yes, how many people?

22c. Relationship to deceased: Partner
 Family member
 Friend or associate
 Bystander
 Worker
 Not known

22d. Where the witnesses using drugs? Yes No Unclear

- 22e. Did the witness(es) call the services? Yes No Unclear
- 22f. Were the witness(es) present at the time of the 'signs of trouble':
- Present
 - Present - but not in the same room all the time
 - Arrived later
 - Left before the services arrived
 - Unable to be determined
23. Where was the person found? Own home or flat
- Home of friend or family member
 - Public space
 - Hostel/ hotel
 - Hospital
 - Other
- 24a. Place of death:
- Own home
 - Home of friend or family member
 - Public space
 - Hostel/hotel
 - A & E
 - Hospital ward or ICU/ITU
 - Other
25. Postcode (first half) of place of overdose:
26. Period of time between 'fatal' overdose and death:
- rapid/instant – a matter of minutes
 - within an hour
 - several hours
 - 12 hours or more
 - a number of days
 - months
 - not seen for a time and found dead
 - Unable to be determined
27. Drugs and paraphernalia found at the scene:
- Yes No
28. Route of administration if one the drugs was heroin:
- Injected
 - Smoked
 - Snorted
 - Other
 - Unable to be determined
29. Route of administration if one of the drugs was cocaine:
- Injected
 - Smoked
 - Snorted
 - Other
 - Unable to be determined
30. Was the heroin taken together with the cocaine?
- Yes No Unable to be determined

31. Prior to the onset of 'signs of trouble' the deceased took drugs:

- Over a period of time – a session
- Took a single dose
- Was on a 'binge'
- Unable to be determined

32. Interventions attempted by witnesses:

- None
- Gain access to person
- Recovery position
- Call ambulance
- CPR
- Other

33. Interventions attempted by Ambulance crew:

- None
- Gain access to person
- CPR
- Inject Naloxone or other substance
- Full protocol
- Transfer to A & E
- Other

34. If police attended, who called them:

- Ambulance crew
- Witnesses
- Not known
-

35. If the ambulance attended was the person deceased on their arrival?

Yes No

36. Did the witness(es) find the person already deceased?

Yes No

37. Witnesses alerted to 'signs of trouble' by (one or more of the following):

- Altered breathing
- Altered skin colour
- Position of the body
- Blood or vomit around the mouth
- Collapsed
- Unable to be roused
- Other

SECTION D- CONTACT WITH SERVICES

38. Last contact with service providers:

	Date:	Days	Weeks	Months
GP:				
Hospital:				
Drug treatment agency				
Psychiatrist:				
Prison:				

39a. Was the deceased on prescribed Methadone (or a substitute)?

- Yes
- No

39b. If yes, (on Methadone or substitute) who prescribed it?

- GP
- Treatment agency
- Hospital
- Private clinic
- Other

40. Was the deceased on a waiting list for rehab/detox services?

- Yes No Unable to be determined

41. Did the deceased have a previous history of rehab and/or detox?

- Yes No Unable to be determined

42. Did the deceased have a previous history of attempted suicide?
 Yes No Unable to be determined

43a. Had the deceased ever been referred to a drug treatment service?
 Yes No Unable to be determined

43b. If yes, did they attend?
 Yes No Unable to be determined

44a. Significant event checklist:
 Release from prison/institution
 Decline in health
 Work issues
 Financial problems
 Relationship problems
 Exposure to trauma or violence

44b. Time frame for significant event:
 Day of overdose
 Week prior to overdose
 Month prior to overdose
 6 weeks prior to overdose
 6 months prior to overdose
 more than 6 months prior to overdose
 anticipated on the day or few days after the overdose
 ?other

45. Health checklist:
 Hep B+
 Hep C+
 HIV/AIDS
 MRSA
 DVT
 Schizophrenia
 Depression
 Self-harm
 Other mental health issue/disorder
 Other

SECTION D- PATHOLOGY and TOXICOLOGY REPORTS

46. Pathology Findings:
 Evidence of injecting drug use
 Evidence of trauma

Notes:

.....

- | | | | | |
|--------------------------|-------------------|-----------|--------------------------|----------------|
| <input type="checkbox"/> | Heroin |mg/L | <input type="checkbox"/> | detected..... |
| <input type="checkbox"/> | Methadone |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Cocaine |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Alcohol |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | MDMA |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Dihydrocodeine |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Diazepam |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Temazepam |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Oxazepam |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Nordiazepam |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Desmethyldiazepam |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Cannabis | | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Amphetamines |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | Ketamines |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | |mg/L | <input type="checkbox"/> | detected |
| <input type="checkbox"/> | |mg/L | <input type="checkbox"/> | detected |

Other Fatal drugs:

- | | | |
|--------------------------|-------|------------|
| <input type="checkbox"/> | | mg/L |
| <input type="checkbox"/> | | mg/L |
| <input type="checkbox"/> | | mg/L |

48. Fatal level of drug noted by toxicologist for one or more drugs.

SECTION F- MEDICAL / TREATMENT AGENCY /SERVICE PROVIDER NOTES

49. Sources of information:

- GP letter or notes
- Psychiatrist letter or notes
- Drug treatment agency letter
- Hospital notes
- LAS reports
- Police
- Coroner's Office/ Continuity statement
- Witnesses
- Other

SECTION G- WITNESS and FAMILY STATEMENTS

National Treatment Agency for Substance Misuse

8th floor, Hercules House, Hercules Road, London SE1 7DU

Tel 020 7261 8573. Fax 020 7261 8883

Email: nta.enquiries@nta-nhs.org.uk Website: www.nta.nhs.uk

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