

# Deaths from drugs of abuse in Sheffield, 1998: the role of prescribed medication

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## SUMMARY

*Characteristics of recent drug abuse-related deaths in the city of Sheffield were examined from the coroner's records. Almost all of those who died of poisoning from a drug of abuse were known to be dependent on heroin yet less than half were receiving treatment. Benzodiazepines were frequently detected alongside opiates during toxicology, the source of which was likely to be the deceased's own prescription.*

**Keywords:** drug abuse; heroin dependency; toxicology.

## Introduction

DEATHS from drugs of abuse, in particular those from opioid-related overdoses, have risen sharply over the past few decades both in the United Kingdom (UK) and in other countries.<sup>1,2</sup> The reasons for this increase are at present unclear and are a matter of considerable debate within the addiction literature.<sup>3</sup>

Previous studies into substance abuse deaths in the UK have shown that prescribing practices may influence this particular pattern of mortality. For example, the widespread prescribing of barbiturates during the 1960s and 1970s was associated with an increase in the number of overdoses of this drug seen at the time.<sup>4</sup> Similarly, a number of studies have reported that the expansion in the use of methadone as an opiate replacement during the early 1990s was paralleled by an increase in the number of deaths involving this drug.<sup>5,6</sup>

Prescribed medication may also have a more subtle influence on actual heroin overdoses themselves. Research indicates that fatal heroin overdoses where morphine (a metabolic breakdown product of heroin) is the only drug detected during toxicology are comparatively rare and is in most instances detected in the presence of other concomitant drugs that may potentiate respiratory depressant effects.<sup>7</sup>

Here we present the preliminary findings from the first year of a 10-year study exploring the patterns of drug-related deaths in the city of Sheffield with particular attention to the role of prescription medication.

## Method

All data described in this report were provided by the City of Sheffield coroner with the approval of the local research ethics committee. The coroner's records were examined for the period of January to December 1998 to identify individuals who had died as a direct result of poisoning by a drug typically abused by illicit drug-using populations (all controlled substances — plus other opioids, benzodiazepines, cyclizine, and inhalants). Alcohol was included only where it was detected in combination with another defined drug.

## Results

### Characteristics

A total of 3674 deaths were referred to the Sheffield coroner's office for 1998. Of these, 32 involved drugs of abuse. Thirty-one of the 32 cases were known to be regular drug users by either family, friends or their general practitioner (GP), with heroin recorded to be the most common drug of abuse. Fourteen of the deceased (44%) were receiving treatment for drug abuse at the time of death. Of these, seven were in receipt of a methadone prescription (five for injectables and two for half-injectable, half-oral methadone) and two were being prescribed dihydrocodeine. All of those

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Table 1 (a). Demographic characteristics.

Characteristic	n = 32
Male (%)	84.4
Age (years)	
Mean	29.0
SD	7.2
Marital status (%)	
Single	87.5
Married/common law	9.4
Unknown	3.1
Employment status (%)	
Unemployed	84.4
Employed	12.5
Unknown	3.1

Table 1 (b). Toxicological findings.

Substances detected	Number of cases
Heroin only	6
Heroin and benzodiazepines	6
Heroin and alcohol	4
Methadone and benzodiazepines	3
Methadone, cyclizine, and benzodiazepines	3
Heroin, alcohol, and benzodiazepines	2
Methadone and cyclizine	1
Heroin, methadone, and benzodiazepines	1
Heroin, methadone, benzodiazepines, and alcohol	1
Heroin, alcohol, dihydrocodeine	1
Heroin, benzodiazepines, and amphetamines	1
Methylenedioxymethamphetamine (ecstasy) and amphetamines	1
Meptazinol and alcohol	1
Butane and alcohol	1

### HOW THIS FITS IN

#### What do we know?

Deaths from drugs of abuse continue to cause concern. Lack of prescribing intervention and multiple drug use have been suggested as factors that may affect mortality rates, both of which may be influenced by prescribing practices.

#### What does this paper add?

Characteristics of recent drug abuse-related deaths in Sheffield provide evidence for the involvement of both these factors. Almost all those who died were known to be regular heroin users, yet less than half were receiving treatment. Benzodiazepines were frequently detected alongside opiates during toxicology, the source of which was likely to be the deceased's own prescription.



receiving treatment for their dependence were also in receipt of a prescription for benzodiazepines.

### Toxicological findings

In order of frequency, the five most commonly detected substances were the heroin metabolite morphine (22 cases), benzodiazepines (17 cases, of which six were in the form of diazepam, five were temazepam, and six were both), alcohol (10 cases), methadone (nine cases), and cyclizine (four

cases).

Morphine was the only substance detected exclusively in six out of the 32 cases (19%). In the remaining cases substances were found in multi-drug combinations. The most common drug combinations were heroin and benzodiazepines (six cases), heroin and alcohol (four cases), methadone and benzodiazepines (three cases), methadone, benzodiazepines, and cyclizine (three cases), and heroin, benzodiazepines, and alcohol (two cases) (Table 1(b)).

### Prescription medication

Levels of the opiate replacement drug methadone were detected in the blood of nine out of the 32 cases. Six of these were in receipt of a prescription for methadone in either injectable (four cases) or half injectable-half oral form (two cases). The source of methadone detected in the three other cases was unknown. Of the 17 cases where benzodiazepines were detected, 12 were being prescribed the drug at the time of death. Where methadone and benzodiazepines were detected concurrently (eight cases), six of these were in receipt of a simultaneous prescription for these drugs.

### Discussion

In respect of the demographic characteristics the results from this study are in broad agreement with previous work in this area. In both the UK<sup>8</sup> and other countries,<sup>2</sup> deaths from substance abuse occur predominantly in unemployed, single males in their mid-to-late twenties. Also consistent with these studies is that the overwhelming majority of cases were known drug users who had been using regularly for a number of years. Of these, less than half were receiving any form of treatment in spite of good evidence that methadone maintenance treatment reduces mortality in heroin users.<sup>8</sup>

Although heroin was detected in more deaths than any other substance it was rarely found alone. In the majority of instances it was detected in combination with other psychoactive drugs, most notably benzodiazepines and alcohol. Methadone was detected in roughly one-third of all cases; however, taken as a proportion of the total number of deaths from drug abuse this figure appears to represent a reduction from that reported in a similar study carried out in Sheffield by Clark *et al* between 1991 and 1994.<sup>6</sup> Furthermore, methadone was always detected in the presence of other drugs, with benzodiazepines once again the most commonly found concomitant.

Since the primary mechanism responsible for fatal opiate overdose is believed to be acute respiratory depression and given the potent respiratory depressive effects of heroin metabolites,<sup>10</sup> the relative contribution that any concomitant drug detected upon toxicological analysis makes to the fatality is difficult to assess. Nevertheless, there is some pharmacological evidence to suggest that co-administration of alcohol or benzodiazepines with opiates may have either an additive or synergistic effect on respiratory depression.<sup>11</sup> These interactions are at present not fully understood. However, given the number of cases in which benzodiazepines were detected, any possible contribution to respiratory depression must be considered to be a danger and

prescribers should not regard these drugs as harmless alternatives or adjuncts to methadone treatment.

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