Denominators for specific drugs-related deaths in England and Wales

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Conflicts of interest: SMB serves on, and was inaugural chair of, the Surveys, Design and Statistics Subcommittee (SDSSC) of Home Office's Scientific Advisory Committee. In 2008, SDSSC reported on 21st Century Drugs and Statistical Science. Authors have research or clinical interests in the epidemiology and prevention of drugs-related deaths. SMB holds GSK shares and MRC-funding as part of the NIQUAD cluster on quantifying drugs harms.

Abstract

Aim: To consider specific drugs-related deaths (DRDs) in England and Wales against available denominators on prevalent users.

Methods: 15,795 DRDs in England and Wales in 1998-2007 were cross-classified by era of registration, sex, age-group, presence/absence of heroin/morphine (H), methadone (M), cocaine (C), benzodiazepines (B), and alcohol (A). We define M-specific DRDs as M present but H, C, and B all absent; and similarly for other drug-specific DRDs which are related to prevalent users based on surveys, prescriptions or capture-recapture estimation. We define M-related DRDs as DRDs with mention of methadone.

Results for 2004-2007: *Male to female ratios* were 2,071:329 (**6.3**:1; 95% CI: 5.6 to 7.1) for H-specific DRDs compared to 155,800:48,200 (**3.2**:1; 95% CI: 2.9 to 3.6) for current injectors in England in 2004/05; 292:52 (**5.6**:1; 95% CI: 4.3 to 8.0) for C-specific DRDs compared to 3.3% [859/25,964]:1.4% [436/31,094] (**2.4**:1; 95% CI: 2.1 to 2.6) for British Crime Survey's prevalence of past-year cocaine use; and 461:145 (**3.2**:1; 95% CI: 2.7 to

3.9) for M-specific DRDs compared to 254,400:102,200 (**2.5**:1; 95% CI: 2.48 to 2.51) recipients of opioid substitution in 2005/06 to 2007/08.

Cocaine-related-DRD risk by age: 107 C-related-DRDs aged 15-24 years and typically 376,000 past-year users gave a per-annum C-related-DRD rate of 7 per 100,000 past-year-cocaine-users but, with 282 C-related DRDs at 35+ years of age (and typically 133,000 past-year users), their per-annum rate was much higher at 53 (95% CI: 47 to 59) C-related-DRDs per 100,000.

Conclusions: Males had double the risk of heroin-specific or cocaine-specific DRD compared with females. Age-gradient in cocaine-related-DRD risk is alarming.

Please see a related series of short articles on Straight Statistics.

This report is issued ahead of a meeting on 11+12 November 2010 on the reporting, toxicology and prevention of drugs related deaths convened by European Monitoring Centre for Drugs and Drug Addiction.

Our analyses are relevant to upcoming discussions on opiate substitution therapy and cocaine-related harms by UK's Advisory Council on the Misuse of Drugs.

Short notes on Straight Statistics accompany this report's release on MRC Biostatistics Unit's website: 9 November 2010.

Quantifying addiction harms, the most basic of which is death, will not come of age, or urgency, until specialist journals step up to the complexity that analysis of drug-related deaths demands. This includes deeper understanding of the demography and toxicology of drug-related deaths & estimating user-prevalence by sex and age-group. An analysis of the demography and toxicology of Scotland's DDDD drug-related deaths (2000-2007) is in press with Addiction Theory and Research.

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Introduction

The demography and toxicology of 15,795 drugs-related deaths (DRDs) registered in England and Wales from 1998 to 2007 are summarised in the **Appendix**. Knowing the age and sex of those who had used cocaine prior to death does not, however, tell us the information that users, their families and the Advisory Council on the Misuse of Drugs (ACMD)[1] need to know, namely: the risk of cocaine-related death per 100,000 past-year users of cocaine.

Presciently, as long ago as 2000, UK's Advisory Council on the Misuse of Drugs (ACMD)[1] commended the estimation of user-prevalences to work out relevant drug-related death rates. Accordingly, and a first not only for England and Wales but internationally, we have sought suitable denominators for assessing the impact of demographic factors on the risks of cause-specific DRDs, notably: heroin (H)-specific (6,263: 40% of all DRDs), methadone (M)-specific (1,612: 10%) or cocaine(C)-specific DRDs (661: 4%).

Identified trends in drug-specific DRDs – such as by sex, age-group or era, see **Appendix** – are set in context by relating them to relevant user-denominators which we have adduced from era-specific capture-recapture studies, data on methadone prescriptions, or surveys of past-year use of specific drugs. Denominators also allow us to assess, by sex or age-group, users' drug-specific DRD risks per 1,000 current injectors, per 1,000 recipients of opioid substitution, or per **100,000** past-year users of cocaine.

The **Appendix** shows that, during 1998-2007, the male: female DRD ratio was highest at 6.4: 1 (5,417: 846) for H-specific DRDs, followed by 5.2:1 (554: 107) for C-specific DRDs, but much lower at 3.8: 1 (1,279: 333) for M-specific DRDs. Decade-totals from the youngest (15-24 years) to oldest age-group (35+ years) were 965: 2,383: 2,069 (and so in the ratio 1: 2.5: 2.1) for males' H-specific DRDs. They were 257: 452: 570 (or 1: 1.8: 2.2) for males' M-specific DRDs; and more extreme by age at 75: 246: 233 (or 1: 3.2: 3.1) for males' C-specific DRDs. Age-pattern was most sharply accentuated, however, for males' benzodiazepine (B)-specific DRDs at 49: 126: 391 (or 1: 2.6: 8.0).

The above drug-specific DRDs by sex need to be set against the backdrop of male: female ratios for current users. Relevant "current user" denominators[1] – by sex or age-group - include: current injectors[2], methadone prescriptions[3-5], and past-year users of cocaine from the British Crime Surveys[6].

Suitable denominators for B-specific DRDs were not available. (The British Crime Survey, for example, does not ask respondents about their use of benzodiazepines.) Also unavailable were methadone prescriptions by age-group. Successive waves of the British Crime Survey were sufficient, however, to estimate cocaine-related DRD risks by both age-group and era (2001-2003 versus 2004-2007) – which was necessary because cocaine-related DRDs had increased from 118 per annum in 2001-2003 to 179 per annum in 2004-2007.

Methods

The Office for National Statistics provided us with a multi-way cross-tabulation in which each DRD was cross-classified by era of registration (1998-2000, 2001-2003, 2004-2007), sex, age-group at death (15-24, 25-34, 35+ years), presence/absence of heroin/morphine (H), presence/absence of methadone (M), presence/absence of cocaine (C), presence/absence of benzodiazepines (B), and presence/absence of alcohol (A).

We define cause-specific DRDs as DRDs with "one specific drug present and three other specified drugs absent" such as "H, not (M, C, B)" [H-specific] or "M, not (H, C, B)" or "C, not (H, M, B)" [C-specific]. We define M-related DRDs as DRDs with mention of methadone; and similarly for other specified drugs.

Different sex ratios for cause-specific DRDs, and different ratios by age-group, were anticipated - and the reason that the multi-way cross-tabulations, hitherto unpublished, were requested. The identified trends in drug-specific DRDs – such as by sex, age-group or era, see **Appendix** – then needed to be set in context by relating them to relevant user-denominators which we have adduced from era-specific capture-recapture studies, data on methadone prescriptions, or surveys of past-year use of specific drugs. Denominators also allow us to assess, by sex or age-group, users' drug-specific DRD risks per 1,000 current injectors, per 1,000 recipients of opioid substitution, or per **100,000** past-year users of cocaine.

In the UK, Bird, Hutchinson and Goldberg[7] first applied ACMD's recommendation on denominators[1] to Scotland's DRDs by sex or age-group and reported, for example, that males' DRD-rate per 100 injectors was 1.7 times that for females. They relied, as we do, on synthesis of published data.

Table 1 summarises available, published evidence on relevant denominators, either for the decade 1998-2007 or for the most recent 4-year era of 2004-2007.

Denominators include Bayesian capture-recapture estimates for the number of current injectors[2] in 2004/05, past-year users of cocaine as reported by successive British Crime Surveys[6], and recipients of opioid substitution therapy by sex (personal communication: Colin Bradbury and Alex Fleming, National Treatment Agency for Substance Misuse). From the financial year 2005/06 onwards, the National Drug Treatment Monitoring System (NDTMS) has tracked the number of drug users attending for specialist or GP prescribing who received opioid substitutes. These are the prescribees reported in **Table 1**: the majority, 83% according to Strang et al.[8], received methadone substitution.

By combining mid-year population estimates for England and Wales (for 2007 or 2003) with pooled information on the prevalence by age-group of past-year users of cocaine from successive sweeps of the British Crime Survey[6], as detailed in **Table 2**, we have estimated annual age-specific denominators of past-year cocaine users for 2004-2007 and for 2001-2003. Using these era-specific denominators, together with the corresponding C-related DRDs, we estimated C-related DRD risks per **100,000** past-year cocaine-users by age-group and era.

Confidence intervals for ratios of assumed-Poisson counts of drug-specific DRDs (all greater than 40) were based on 1,000 pairs sampled from the normally-approximated respective distributions for numerator and denominator counts. Similarly, an approximate 95% confidence interval for the ratio of male to female user-prevalence, or current injectors, was based on the sampling of pairs from normally-approximated distributions, which took survey denominators into account, or invoked logarithmic transformation for female current injectors.

Funders had no role in design, analysis, interpretation, or writing of the report, which is published by decision of its authors.

Results

Heroin-specific DRD risks by sex: The top panel of **Table 1** shows that the male: female ratio for H-specific DRDs in 2004-2007 was **6.3**: 1 (2,071: 329; 95% CI: 5.6 to 7.1).

Current injectors are a relevant, but imperfect, denominator for H-specific DRDs as H-specific DRDs do not occur solely among injectors. Derived by Bayesian capture-recapture analysis of English data from 2004/05[2], **Table 1** shows then-current injectors (to the nearest 100) as 155,800 males and 48,200 females. A minority of current injectors was 15-24 years old, and the male: female injector ratio was more extreme among older injectors.

Taking the sex ratio of England's 2004/05 injectors as broadly representative for England and Wales in 2004-2007, we conclude that male injectors outnumbered females by **3.2**:1 (95% CI: 2.9 to 3.6) but the male: female ratio for H-specific DRDs was more extreme at **6.3**:1, as above. Thus, taking injector denominators into account, the relative risk of H-specific DRD appears to be nearly twice as high for males as for females with a risk multiplier of **2.0** (95% CI: 1.7 to 2.3). By age, males' relative disadvantage is described by risk multipliers of 2.4 at 15-24 years versus 1.8 at 25+ years.

Ignoring the mismatch between numerator (for England and Wales: respective general populations of around 50 millions and 3 millions) and denominator (England), per-annum H-specific DRD rates per 1,000 current injectors in 2004-2007 can be approximated by age-group as 2.9 (95% CI taking only Poisson variation into account: 2.6 to 3.3) and 3.4 (95% CI: 3.2 to 3.5) for males; or 1.2 (95% CI: 0.9 to 1.5) and 1.9 (95% CI: 1.6 to 2.1) for females. Recall that H-specific DRDs account for 40% only of all DRDs.

Cocaine-specific DRD risks by sex: The second and third panels of **Table 1** display, by sex and broad age-group (either 16-24 years or 16-59 years), the available data on the prevalence of last-year use of any form of cocaine as reported in successive sweeps of the British Crime Survey[6]. Whether focusing on prevalence of last-year use by 16-24 year olds (male: female ratio of **1.7**:1) and *their* cocaine-specific DRDs in the decade of 1998-

2007 (male: female ratio of **3.3**:1 (157:48, with 95% CI from 2.4 to 4.6) or on 16-59 year olds in 2004-2007 for whom prevalence and C-specific DRD ratios (male: female) were **2.4**:1 (95% CI: 2.1 to 2.6) and **5.6**:1 (95% CI: 4.3 to 8.0), the relative risk of C-specific DRD is again about twice as high for male as for female cocaine-users: for 16-59 year olds, the risk multiplier was **2.4** (95% CI: 1.7 to 3.4).

Methadone-specific DRD risk by sex: The bottom panel of **Table 1** displays the National Drug Treatment Agency data on opioid substitution prescribing by sex for 2005/06 to 2007/08. The male: female ratio for M-specific DRDs in 2004-2007 of **3.2**:1 (95% CI from 2.7 to 3.9) was only 30% higher than the sex ratio of **2.5**:1 for those in receipt of opioid substitution (254,400 males:102,200 females) which makes for a risk multiplier of **1.3** (95% CI: 1.1 to 1.5) only. On a per-annum basis, the M-specific DRD risk in 2004-2007 was 1.4 per 1,000 males receiving substitute prescribing (95% CI: 1.2 to 1.5) and 1.1 per 1,000 female recipients (95% CI: 0.9 to 1.2).

*Age-specific cocaine-related DRD risk per 100,000 past-year users of cocaine**:*** By combining mid-year population estimates for England and Wales (for 2007 or 2003) with pooled information on the age-specific prevalence of past-year users of cocaine (any form) from successive sweeps of the British Crime Survey[6], see **Table 2**, we can estimate annual denominators of past-year cocaine users for 2004-2007 as: 376,000 in the age-group 15-24 years; 296,000 aged 25-34 years; and 133,000 aged 35+ years. Alternative, higher estimates for 2004-2007 use information only from the British Crime Survey's Drug Use Declared in 2008/09. Lower denominators for 2001-2003 were got by applying age-specific prevalences for past-year use of cocaine to the 2003 (rather than 2007) mid-year population estimates for England and Wales.

Whichever cocaine-user denominators are adopted, the resultant per-annum C-related DRD rates per **100,000** past-year cocaine-users clearly increase very sharply with age. **Table 2** shows that there were 107 C-related DRDs in 2004-2007 in the 15-24 year age-group, giving a per-annum C-related DRD rate of 7 per 100,000 past-year cocaine-users in that age-group (95% CI: 5.8 to 8.5). As there were 327 C-related DRDs in the 25-34

year age-group, a three or four-times higher per-annum rate of 20 or 28 C-related DRDs per 100,000 past-year cocaine-users applies (depending upon denominator); and with 282 C-related DRDs in the 35+ age-group, their per-annum rate was 53 C-related DRDs per 100,000 past-year cocaine-users (95% CI: 47 to 59), which is much higher still.

By age-group, **Table 2** gives the corresponding per-annum C-related DRD rates in 2001-2003 per 100,000 past-year cocaine-users as: 7, 19 (95% CI: 16 to 22) and 37 (95% CI: 31 to 43). Cocaine's lethality for older users has thus increased significantly, by 40%, over the course of the 21st century.

Discussion

Lethality of specific drugs – males at higher risk after allowing for user-prevalence: In December 2008, the Home Office's Surveys, Design and Statistics Subcommittee[2] called for better evidence-synthesis across existing data-sets, and more insightful analyses of them.

By applying ACMD's recommendation on denominators[1], Bird, Hutchinson and Goldberg[7] reported that males' DRD-rate per 100 injectors in Scotland was 1.7 times that for females. Despite a recently-revised drugs strategy[9], differential risk multipliers by sex or age-group for specific DRDs in England and Wales were over-looked, because relevant denominators had not been adduced.

By taking account of relevant denominators (current injectors, recipients of opioid substitution, or past-year users of cocaine), we have discovered that the relative risk of both H-specific and C-specific DRDs is twice as high for males as for females because the male: female ratio of drug-specific DRDs (6.3: 1 for H-specific DRDs; 5.6:1 for C-specific DRDs in 2004-2007) was about twice the corresponding prevalence ratio (3.2 and 2.4 respectively). By contrast, for 2004-2007, the per-annum M-specific DRD rate per 1,000 recipients of opioid substitution was 1.4 for males (95% CI: 1.2 to 1.5), only 30% higher than for females (1.1; 95% CI: 0.9 to 1.2).

If, by 2004-2007, the majority of M-specific DRDs were occurring in those for whom methadone was prescribed, then we might speculate that males' nearly doubled H-specific DRD risk was impressively moderated by their recruitment into opioid substitution. Official statistics on DRDs with any mention of methadone do not differentiate by whether the deceased was (or was **not**) receiving methadone by prescription. The National Programme on Substance Abuse Deaths (NpSAD), to which coroners report voluntarily, does pay heed to whether the deceased was receiving methadone by prescription[10], which is essential for monitoring properly the apparent lethality of diverted versus prescribed methadone[5]. Of the 228 M-only DRDs in 2004-2007 that coroners had referred to NpSAD, only 78 (34%) were known to be receiving methadone by prescription. Thus, two-thirds of our M-specific DRDs may be those for whom methadone was **not** prescribed, and the sex ratio of those who acquire non-prescribed methadone may be different.

Comparison between the H-specific DRD risk per 1,000 injectors (3.3 per annum in 2004-2007 for males) and the M-specific DRD risk per 1,000 recipients of opioid substitution (1.4 per annum in 2004-2007 for males) is complicated for several reasons: i) H-specific DRDs are not confined to injectors, ii) injectors may experience other types of DRD than H-specific, iii) M-specific DRDs are not be confined to recipients of opioid substitution, iv) not all opioid substitution is by methadone, v) recipients of methadone may experience other types of DRD than M-specific, and vi) bias in methadone referrals. We therefore do not dwell on these apparently reassuring-low estimates, although it would have been remiss of us neither to have provided them - as a potential insight to the benefit of opioid substitution - nor to have given the caveats that attach to them.

Table 1 led us to speculate that methadone may have greater in-reach among heroin-dependent females. Whereas the ratio of male opioid recipients (3-year mean: 84,800) to current injectors (155,400) was 0.5: 1, it was 0.7: 1 for females (34,100: 48,200). Are females still be more likely to seek help despite efforts by the criminal justice system in England to encourage into treatment opiate-dependent offenders, four-fifths of whom, to judge by the Arrestee Survey[11], are male?

Missing denominators: Missing denominators for England and Wales include injector numbers by sex, age-group and era throughout the decade of 1998-2007. The specific DRD risks that we have highlighted by sex or age are sufficient to make a strong public health argument that the British Crime Survey (BCS) should itself, on a regular basis, publish pooled information on drug-specific user-prevalence by age-group and sex to serve as suitable denominators for specific DRDs.

Not even BCS can solve the absence of denominators for B-specific DRDs as its respondents are not asked about their use of benzodiazepines which are widely prescribed to patients who have no recourse to illegal drugs. Novel approaches are therefore needed to access denominators (by sex and age-group) for past-year use of benzodiazepines, including, for example, by appeal to UK's General Practitioner Research Database for information on the prescription of benzodiazepines to opiate-dependent patients versus to others. Doing so is important because B-specific DRDs were as frequent as C-specific DRDs in 2004-2007, see **Appendix**.

The lack of methadone/opioid prescription data by sex (prior to 2005/06) and by age-group (to date) is also disappointing. Thus, we have been unable to investigate if the M-specific DRD risk alters by age-group.

*Age-specific cocaine-related DRD risk per **100,000** past-year cocaine-users:* By combining mid-year population estimates for England and Wales (for 2007 or 2003) with pooled information on the age-specific prevalence of past-year users of cocaine from successive sweeps of the British Crime Survey, we estimated annual denominators of past-year cocaine users.

Per-annum C-related DRD rates in 2004-2007 increased very sharply with age from 7 per 100,000 past-year cocaine-users aged 15-24 years (95% CI: 6 to 9) to 53 (95% CI: 47 to 59) at 35+ years of age, having been in 2001-2003: 7, 19 (95% CI: 16 to 22) and 37 (95% CI: 31 to 43). The explanation for why cocaine's lethality for older users seemingly increased by 40% over the course of the 21st century is uncertain but may suggest that

impurity of cocaine or increased frequency of use affects older users disproportionately. Alternatively, substantially higher C-related DRDs in older cocaine-users may be linked to age-related cardiovascular risk.

Co-presence of alcohol: Co-presence of alcohol may contribute to males' greater H-specific DRD risk but, between the sexes, alcohol's co-presence rate is similar at C-specific DRDs, see **Appendix**.

Yet, in the Arrestee Survey[11], 76% of over 5,000 respondents who had used cocaine in the past year had a FAST score of 3+ (indicative of dependent drinking) but only 47% of over 4,000 respondents who had used heroin. **Appendix** shows this order reversed for alcohol's co-presence at H-specific versus C-specific DRDs and, for males, strong age-relatedness in alcohol's co-presence at H-specific DRDs but not at C-specific DRDs. Cardiovascular vulnerability may be a more likely explanation for rising C-specific DRD risk with age.

Summary and recommendations: Males' risk of H-specific or C-specific DRD was disproportionately high, by a factor of two, relative to their sex-specific prevalence of injecting or past-year use of cocaine. Not so for M-specific DRDs.

We have shown that the rate of C-related DRD risk per 100,000 past-year cocaine-users increases sharply with age and that the per-annum rate in the older age-group (35+ years) was 40% higher in 2004-2007 than in 2001-2003 for reasons that remain speculative.

Relevant denominators were often missing. Timeliness and geographical matching of our available numerators on drug-specific DRDs to prevalence-denominators were inexact. In particular, timeliness was approximate because DRDs are reported by their year of registration rather than of occurrence[12].

We recommend that BCS should periodically pool information across survey years to elucidate trends and enable demographical analyses of the prevalence of past-year-use of

specific illicit drugs. We note that BCS has begun to do so in its 2010 report on Drug Misuse Declared: Findings from the 2009/10 British Crime Survey, see http://rds.homeoffice.gov.uk/rds/pdfs10/hosb1310.pdf (accessed 25 October 2010).

Public health messages which specifically warn males about their disproportionate heroin-specific and cocaine-specific DRD risk need to be developed, and studies designed to quantify the extent to which males' higher risk is intrinsic or related to measurable co-factors (such as use of alcohol or cardiovascular risk).

Public health messages should also alert older cocaine-users to their much higher C-related DRD risk per 100,000 users.

Contributions: SMB designed the data-request and analysis in the light of subject-matter knowledge contributed by JRR and JS who also contributed to editing, interpretation and referencing.

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Table 1. Relevant denominators by sex for H-specific, M-specific, and C-specific DRDs.

Denominators (95% confidence interval, CI)	**Males**	**Females**	**Prevalence ratio, m: f**	**E&W Drug-specific DRDs at 15+ years ⇔ male: female DRD ratio**
*Bayesian capture-recapture estimated numbers of current injectors for **England** (to nearest 100): era of 2004-2007 (personal communication: King, Hay, Hutchinson and Bird, see also[8])*				
15-24 years (95% CI)	**21,700** (20.0K- 23.7K)	**11,200** (10.3K-12.3K)	1.9: 1	**H,** not M, C, B for 2004-2007: 2,071 males, 329 females ⇔ **6.3: 1 (95% CI: 5.6 to 7.1)** *By age-group* **15-24 years:** 256 males, 54 females ⇔ **4.7:1** *(95% CI: 3.6 to 6.4)* **25+ years:** 1,815 males, 275 females ⇔ **6.6:1** *(95% CI: 5.8 to 7.6)*
25+ years (95% CI)	**134,100** (122.3K-146.9K)	**37,000** (34.3K-40.9K)	3.6: 1	
Totals (approximate 95% CI)	**155,800** (143K-168K)	**48,200** (45K-52K)	**3.2: 1 (95% CI: 2.9 – 3.6)**	

British Crime Survey last-year use of any cocaine by 16-24 year olds: decade of 1998-2007				
BCS, 2006/07 (unweighted base)	**7.6%** (2,704)	**4.6%** (3,005)	**6.8%: 3.9%, 1.7:1 (95% CI: 1.5 - 2.0)** Prevalence CIs = 6.3% to 7.4% & 3.5% to 4.3%	**C,** not H, M, B for **1998-2007:** 157 males, 48 females ⇔ **3.3:1 (95% CI: 2.4 to 4.6)**
BCS, 2004/05 (unweighted base)	**6.7%** (2,918)	**3.4%** (3,279)		
BCS, 2003/04 (unweighted base)	**6.1%** (2,576)	**3.9%** (2,775)		

British Crime Survey last-year use of any cocaine by 16-59 year olds: era of 2004-2007, and for decade of 1998-2007				
BCS, 2006/07 (unweighted base)	**3.7%** (13,253)	**1.6%** (15,599)	**3.3%: 1.4%, 2.4: 1 (95% CI: 2.1- 2.6)** Prevalence CIs = 3.1% to 3.5% & 1.3% to 1.5%	**C,** not H, M, B for 2004-2007: 292 males, 52 females ⇔ **5.6:1 (95% CI: 4.3 to 8.0)**
BCS, 2004/05 (unweighted base)	**2.9%** (12,711)	**1.2%** (15,495)		
BCS, 2003/04 (unweighted base)	**3.4%** (11,055)	**1.4%** (13,142)	2.4: 1	**C,** not H, M, B for **1998-2007:** 554 males, 107 females ⇔ **5.2:1**
BCS, 2001/02: white ethnicity (unweighted base)	**3%** (not stated)	**1%** (not stated)	3: 1	

National Drug Treatment Agency prescriptions for opioid substitution (mainly methadone) by sex and era			
Prescription items (000s) and cost (£ms), 1998-2000	3,687.7 at £31.728m (neither is available by sex)	Not available	**M,** not H, C, B for 1998-2000: 523 males, 122 females ⇔ **4.3:1**
Prescription items (000s) and cost (£ms), 2001-2003	4,360.7 at £36.290m (neither is available by sex)		**M,** not H, C, B for 2001-2003: 295 males, 66 females ⇔ **4.5:1**
Users given opioid substitutes by specialist or GP prescribers in financial years 2005/06 to 07/08	**England only** Males: 76,033+84,242+94,147 = **254,400 (to nearest 100)** Females: 31,060+33,865+37,321 = **102,200 (to nearest 100)**	**England only** Substitution prevalence ratio, **m: f = 2.49: 1 (95% CI: 2.48 to 2.51)**	**M,** not H, C, B for 2004-2007: 461 males, 145 females ⇔ **3.2:1 (95% CI: 2.7 to 3.9)**

Table 2. British Crime Surveys' estimated past-year users of cocaine by age and era.

E&W mid-year population by age-group	**16-19**	**20-24**	**25-29**	**30-34**	**35-44**	**45-54**	**55-59**
2007	**2.861m**	**3.661m**	**3.526m**	**3.473m**	**8.209m**	**7.026m**	**3.321m**
2003	**2.702m**	**3.281m**	**3.284m**	**3.919m**	**8.058m**	**6.720m**	**3.385m**

Drug Misuse Declared: findings from British Crime Survey on % past-year use of any cocaine & estimated number of users/un-weighted survey base							
2008/09	**5.0%** 135/2,170	**7.9%** 217/2,751	**7.1%** 197/2,774	**4.4%** 140/3,191	**1.3%** 106/8,136	**0.3%** 21/6,988	**0.0%** 0/3,519
Applied to mid-2007 population. {2004-07 per-annum any-C DRD risk per 100,000 users}	**0.467m** *{6 per 100K}*		**0.403m** *{20 per 100K}*		**0.128m** *{55 per 100K}*		
2007/08	**3.5%** 99/2,817	**6.3%** 186/2,950	**5.4%** 152/2,820	**2.9%** 97/3,334	**1.3%** 107/8,194	**0.3%** 21/6,863	**0.2%** 7/3,443
2006/07	**3.4%** 94/2,755	**8.4%** 248/2,953	**5.9%** 165/2,794	**3.4%** 115/3,378	**1.2%** 100/8,329	**0.4%** 28/6,991	**0.0%** 0/3,689
2005/06	**3.9%** 113/2,898	**7.6%** 228/2,994	**4.7%** 127/2,704	**3.0%** 111/3,688	**1.5%** 129/8,628	**0.2%** 14/6,984	**0.0%** 0/3,962
Sum {2} Applied to mid-2007 population. {2004-07 per-annum any-C DRD risk per 100,000 users}	**3.6%** 306/8,470	**7.4%** 662/8,897	**5.3%** 444/8,318	**3.1%** 323/10,400	**1.3%** 336/25,151	**0.3%** 63/20,838	**0.06%** 7/11,094
	0.376m *{7 per 100K}*		**0.296m** *{28 per 100K}*		**0.133m** *{53 per 100K}*		
Any-C DRDs in 2004-07	*107*		*327*		*282*		

2004/05	**3.5%** 108/3,092	**6.3%** 196/3,104	**3.2%** 199/6,244	**1.1%** 89/8,129	**0.3%** 20/6,595	**0.1%** 4/3,731
2003/04	**3.6%** 94/2,617	**6.2%** 170/2,734	**4.5%** 243/5,407	**1.4%** 96/6,840	**0.3%** 17/5,708	**0.0%** 0/3,198
*Sum {3} Applied to mid-2007 population **or to mid-2003 population.** {2001-03 per-annum any-C DRD risk per 100,000 users}*	**3.5%** 202/5,709	**6.3%** 366/5,838	**3.8%** 442/11,651	**1.2%** 185/14,969	**0.3%** 37/12,303	**0.06%** 4/6,929
	0.337m		**0.266m**	**0.125m**		
	0.301m *{7 per 100K}*		**0.273m** *{19 per 100K}*	**0.122m** *{37 per 100K}*		
Any-C DRDs in 2001-03	*61*		*157*	*136*		

APPENDIX

Table A1. Specified drug-related deaths (DRDs) by era of registration: for males by age-group, and for all females. Summarised are DRDs with presence of one specified illegal drug and three specified drugs absent. Shown in brackets (A = , %) are the number and percentage with alcohol (A) also present.

Subgroup	1998-2000	**2001-2003**	2004-2007	DECADE-TOTALS:
		Males: *15+ years*		***{male: female ratios}***
H, not M, C, B	1,578 (A = 439, 28%)	1,768 (A = 486, 27%)	2,071 (A = 764, 37%)	5,417 (A = 1689, 31%) ***{m: f ratio 6.4: 1}***
M, not H, C, B	523 (A = 125, 24%)	295 (A = 109, 37%)	461 (A = 175, 38%)	1,279 (A = 409, 32%) ***{m: f ratio 3.8: 1}***
C, not H, M, B	113 (A = 17, 15%)	150 (A = 24, 16%)	292 (A = 59, 20%)	554 (A = 100, 18%) ***{m: f ratio 5.2: 1}***
B, not H, M, C	211 (A = 99, 47%)	165 (A = 75, 45%)	190 (A = 97, 51%)	566 (A = 271, 48%) ***{m: f ratio 1.2: 1}***
		Females: *15+ years*		
H, not M, C, B	236 (A = 36, 15%)	281 (A = 65, 23%)	329 (A = 75, 23%)	846 (A = 176, 21%)
M, not H, C, B	122 (A = 24, 20%)	66 (A = 14, 21%)	145 (A = 47, 32%)	333 (A = 85, 26%)
C, not H, M, B	23 (A = 2, nr)	32 (A = 11, 34%)	52 (A = 13, 25%)	107 (A = 26, 24%)
B, not H, M, C	141 (A = 45, 32%)	172 (A = 53, 31%)	169 (A = 56, 33%)	482 (A = 154, 32%)
		Males, *15-24 years*		
H, not M, C, B	350 (A = 76, 22%)	359 (A = 53, 15%)	256 (A = 80, 31%)	965 (A = 209, 22%)
M, not H, C, B	132 (A = 25, 19%)	47 (A = 15, 32%)	78 (A = 33, 42%)	257 (A = 73, 28%)
C, not H, M, B	12 (A = 1, nr)	19 (A = 3, nr)	44 (A = 9, 20%)	75 (A = 13, 17%)
B, not H, M, C	17 (A = 5, nr)	16 (A = 5, nr)	16 (A = 5, nr)	49 (A = 15, 31%)
		Males, *25-34 years*		
H, not M, C, B	753 (A = 191, 25%)	796 (A = 196, 25%)	834 (A = 254, 30%)	2,383 (A = 641, 27%)
M, not H, C, B	211 (A = 52, 25%)	104 (A = 37, 36%)	137 (A = 54, 39%)	452 (A = 143, 32%)
C, not H, M, B	59 (A = 8, 14%)	67 (A = 13, 19%)	120 (A = 21, 18%)	246 (A = 42, 17%)
B, not H, M, C	53 (A = 26, 49%)	36 (A = 20, 56%)	37 (A = 26, 70%)	126 (A = 72, 57%)
		Males, *35+ years*		
H, not M, C, B	475 (A = 172, 36%)	613 (A = 237, 39%)	981 (A = 430, 44%)	2,069 (A = 839, 41%)
M, not H, C, B	180 (A = 48, 27%)	144 (A = 57, 40%)	246 (A = 88, 36%)	570 (A = 193, 34%)
C, not H, M, B	41 (A = 8, 20%)	64 (A = 8, 13%)	128 (A = 29, 22%)	233 (A = 45, 19%)
B, not H, M, C	141 (A = 68, 48%)	113 (A = 50, 44%)	137 (A = 66, 48%)	391 (A = 184, 47%)
		Females, *35+ years*		
B, *not H, M, C*	*120 (A = 36, 30%)*	*145 (A = 42, 29%)*	*152 (A = 45, 30%)*	*417 (A = 123, 29%)*

Table A2. Drugs-related deaths registered in England & Wales, 1998-2007: presence/absence of heroin/morphine (H), methadone (M), and cocaine (C).

Overview by age-group & toxicology of 3,205 female DRDs for decade of 1998-2007							
Age-group {opiate-related/**total DRDs**; % opiate-related}		**15-24 years** **{** 322/ **501;** 64%**}**		**25-34 years** **{** 501/ **886;** 57%**}**		**35+ years** **{** 667/**1,818;** 37%**}**	
Non-overlapping toxicology subgroups: heroin present but no methadone **(H,** no M**), methadone present (M),** neither heroin nor methadone present (No H, No M). *For each subgroup, in italics, we show the number and % DRDs with cocaine present – generally highest in the* No H, No M *subgroup*							
H, no M	No C	223	*209*	309	*285*	447	*433*
	Cocaine, %		*14, 6%*		*24, 8%*		*14, 3%*
M	No C	99	*92*	192	*177*	220	*201*
	Cocaine, %		*7, 7%*		*15, 8%*		*19, 9%*
No H, No M	No C	179	*152*	385	*336*	1,151	*1114*
	Cocaine, %		*27, 15%*		*49, 13%*		*37, 3%*

Overview by age-group & toxicology of 12,590 male DRDs for decade of 1998-2007							
Age-group {opiate-related/**total DRDs**; % opiate-related}		**15-24 years** **{**1,525/**2,041;** 75%**}**		**25-34 years** **{**3,672/**5,125;** 72%**}**		**35+ years** **{**3,244/**5,424;** 60%**}**	
Non-overlapping toxicology subgroups: heroin present but no methadone **(H,** no M**), methadone present (M),** neither heroin nor methadone present (No H, No M). *For each subgroup, in italics, we show the number and % DRDs with cocaine present - generally highest in the* No H, No M *subgroup*							
H, no M	No C	1,112	*1056*	2,827	*2623*	2,378	*2228*
	Cocaine, %		*56, 5%*		*204, 7%*		*150, 6%*
M	No C	413	*389*	845	*800*	866	*824*
	Cocaine, %		*24, 6%*		*45, 5%*		*42, 5%*
No H, No M	No C	516	*439*	1,453	*1193*	2,180	*1938*
	Cocaine, %		*77, 15%*		*260,18%*		*242, 11%*