


## DRUG & ALCOHOL FINDINGS *Hot topic*

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### Overdose deaths in the UK: crisis and response

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In January 2015 this hot topic tentatively relayed some good and not so good news: “The year 2013 may prove to have been a turning point in drug-related deaths in the UK, as national naloxone programmes [distributing an antidote to **opioid** overdose] in Scotland and Wales appeared to be denting high death rates, while England’s steady decline in deaths decisively reversed, perhaps a sign of the feared impacts of funding stringencies and a turning away from harm reduction ... In each case only time and further study will tell.”

With figures now available for another two years plus analyses of the upturns they revealed, it is clear that every nation in the United Kingdom saw increased drug misuse deaths from 2013 or 2014. In raw numbers, in proportion to the general population, and probably too in proportion to the number of problem drug users, the increases ended at record levels, with opioid-related deaths the driving force.

What caused the upturns was a major talking point in 2016. Especially in England, commentators targeted the UK government’s recovery agenda for failing to maintain harm-reduction services and a harm-reduction ethos. Others emphasised the ageing of the heroin-using population as fewer young people join their ranks, leaving the overall population increasingly dominated by older and more multiply ill and vulnerable users who started using decades ago, a trend only briefly interrupted by the ‘heroin drought’ of (roughly) 2010 to 2012. National naloxone programmes in Scotland, Wales and Northern Ireland, and the investment in treatment in England, did not prevent the upturns, but almost certainly moderated their steepness. One constant is that the death rate in Scotland remains dramatically excessive, perhaps partly because that country engages a smaller proportion of its problem drug users in treatment than England.

This broad outline is filled in below, acknowledging the possibility that it will be materially redrawn by future years’ figures. Other hot topics have focused on training programmes distributing the opiate overdose antidote **naloxone**, an important new way to curb rising drug overdose deaths, and the prospects for establishing facilities in which drug users can **more safely inject**, so these overdose prevention options are dealt with only briefly here, leaving treatment’s role as the major theme. Analysing data and commentary on a cause of death **now a bigger killer** in Britain than traffic accidents is worth spending some time on. To help absorb the messages, most sections start with one or two introductory paragraphs which convey the essence of what follows. These paragraphs end in ▶▶▶ **more** ... They are collected together in the panel below, which acts as a summary of the hot topic.

**Click on headings to go to corresponding section of main text**

#### **New public health indicator signals national concern at rising deaths**

With minor variations, across the UK the deaths concerned **are defined** as those where the underlying cause is registered as drug abuse or drug dependence, and/or drug poisoning deaths involving substances controlled under the Misuse of Drugs Act. Officially referred to as drug misuse or drug-related deaths, fatal ‘drug overdoses’ is a looser but generally appropriate shorthand, though many are suicides or of undetermined motivation.

An important new source of data yet to make its mark on the debate is the **2016 revision** to the Public Health Outcomes Framework for England – indicators of the nation’s health by which local areas are held to account. A sign of national concern, the revision added the rate of drug misuse deaths per million of an area’s population to the indicators. According to the Department of Health, it was a response to “a rising trend in drug related deaths over the last few years,” added because “Local authority action, including the quality and accessibility of the drug services they commission and how deaths are investigated and responded (sic) has an impact on drug misuse death rates.” This harm-reduction indicator now takes its place alongside what the framework terms “recovery outcomes” in the form of successful completion of treatment followed by non-return within six months.

Despite some complications, the consistent picture is that totalled across the UK deaths related to

drug misuse rose steeply between 2012 and 2015, driven by a corresponding rise in deaths involving opiate-type drugs, and in particular, [heroin](#).

### **Upturn seen in every country of the United Kingdom**

Devolution in the UK has created 'natural experiments' in the implementation of different national policies, and the opportunity to assess their impacts on drug-related deaths. At least at the level of rhetoric, during 2008 to 2010 England and Scotland [turned away](#) from the attempt to reduce harm from continuing drug use and towards abstinence-based recovery from addiction. The same trend found an echo in Wales, though that nation [adhered](#) to an "approach to tackling substance misuse ... based on the core principle of harm reduction". In Scotland, Wales, and Northern Ireland, national naloxone distribution programmes sought to counter opioid-related overdose deaths, while England's response was localised and patchy. But in England's favour was the legacy of the [mission](#) of the [National Treatment Agency for Substance Misuse](#) to double the number of patients in drug addiction treatment from 100,000 in 1998 to 200,000 in 2008. This [they did, with an eye primarily](#) on reducing crime and improving public health, placing methadone maintenance and allied programmes in the vanguard. Most of the UK data we have on treatment's impact on drug overdose deaths reflects the fruits of this effort.

To understand the possible effects of these policies first we need to break down the UK trends into those for the constituent nations. Despite differences in national policies, it is now clear that [every country](#) of the United Kingdom saw an upturn in drug misuse deaths in 2015, continuing a recent trend first seen in 2013 in [England](#) and 2014 in [Scotland](#). In Northern Ireland (1 2) some of the upturn in and after 2013 may have been due to the inclusion of new drugs in the Misuse of Drugs Act, but probably not all.

### **Death rates far greater in Scotland**

Of the UK nations, drug-related deaths and concern over these deaths are at their height in Scotland, where a 'drug-related' death equates to a 'drug misuse' death in England and Wales. There are complications in making these comparisons, but the broad implications of the figures are that Scotland's death rate per million of the population is greater partly because it has a greater concentration of problem drug users, but also because within a given period, each problem drug user in Scotland is around 50% more likely to die due to drug misuse than their counterparts in England.

### **Treatment penetration may partly explain 'Scottish effect'**

Given the evidence that treatment protects against overdose deaths, part of the reason for the discrepancy in death rates between Scotland and England may be that relatively few problem drug users in Scotland are under that protective umbrella. Other influences raising Scotland's drug-related death rate may be the same mix of factors which for decades have caused overall mortality rates there [to exceed](#) those of the rest of the UK.

### **Fatalities increasingly involve older heroin users**

Official sources and government advisers have interpreted the recent upturns in drug misuse deaths as the continuation of a longer-term trend due to the ageing of the heroin-using population as fewer young people join their ranks, leaving the overall population increasingly dominated by older and more multiply ill users. Due to their health weaknesses, social isolation and perhaps other factors, each of these older, long-term heroin users is, it is argued, more likely to suffer a fatal overdose than younger heroin users.

### **Mortality and treatment trends said to reflect an ageing heroin epidemic 'bulge'**

In England and in Scotland, the ageing of those suffering an opioid-related death has mirrored the ageing of the opioid-dependent treatment population, both of which reflect general population trends consistent with an ageing population of long-term heroin users who started using in the mid-90s or before. Because they are only partially being replaced by younger recruits, the result is an increase in the average age of problem heroin users – the trend thought to account for increases in drug-related deaths, one not fully counteracted by diminishing overall numbers.

### **Upturns due to "prematurely ageing" heroin users, say drug policy advisers**

While the figures presented above are consistent with the ageing hypothesis, only expert analysis could eliminate alternative scenarios. Above all, this has been provided by [an investigation](#) from the Advisory Council on the Misuse of Drugs into opioid-related deaths in the UK. With unpublished as well as published data at their disposal, they could "assert with a good degree of confidence that the ageing profile of heroin users with increasingly complex health needs (including long-term conditions and poly-substance use), social care needs and

continuing multiple risk behaviours has contributed to recent increases in drug-related deaths.”

### **Are older long-term heroin users more likely to fatally overdose?**

Attributing the increasing death rate to ageing depends on one critical assumption: that during a given period, longer-term, older users are more likely to fatally overdose than younger users with a shorter addiction history. Though it might seem natural, this assumption is not a given. The deaths concerned are mainly overdose deaths, not those due directly to age or to the development and progression of chronic diseases. Conceivably, older and more experienced users who have perhaps survived earlier overdoses would be more rather than less able to avoid fatalities. Only data and analysis can settle the issue of whether age is associated with increased risk due to accumulated ill-health, or decreased risk due to accumulated experience; what we know supports the increased-risk assumption (1 2).

### **Short-lived dip in deaths was due to the heroin ‘drought’**

The sharp dip in heroin-related deaths in England and Wales and in Scotland in 2010 to 2012/2013 [has been attributed](#) to a shortage of heroin on the illicit market resulting in its reduced use, partially compensated perhaps by resort to other opiate-type and sedating drugs. If this was the case, the English and Welsh experience shows that overall drug overdose deaths can be reduced by making heroin less available, while the Scottish variant shows that deaths may actually rise if other overdose-generating drugs take heroin’s place. The mechanism linking the heroin drought and its reversal to drug poisoning deaths has been debated, but it [is thought](#) that the availability and price of heroin affected whether drug users consumed it and how often, and the amount they consumed.

### **Is poverty an underlying risk factor?**

Deprivation and being at the wrong end of socioeconomic inequality are associated with multiple, overlapping lifestyle-related and other risk factors leading to premature death, including excessive drinking, smoking, poor diet and low levels of physical activity. This constellation is [thought](#) to be the reason why alcohol-related mortality and ill-health are greater among poorer than more well-off drinkers, even though on average poorer people drink less. Conceivably, similar influences partly account for the concentration of drug-related deaths in poorer communities and among more disadvantaged drugtakers. This mechanism may be visible in the overlapping comorbidities [noted](#) among drug-related fatalities in Scotland. Whatever the causal chains, in the UK the association between drug-related mortality and deprivation is well established (1 2 3 4 5).

### **Treatment protects; leaving is risky**

Internationally [the evidence is strong](#) that being in treatment – and especially for opiate users, being in a substitute prescribing programme – helps prevent overdose deaths. This effect has also recently been explored in relation to drug poisoning deaths in the UK (1 2 3 4), providing further evidence of the protective effect of being in treatment and the heightened risk of overdose death while not in treatment and after leaving. It means that apart from specific harm reduction initiatives, lives should be saved by simply extending the reach and duration of treatments associated with a reduced death rate.

### **Treatment’s shield is uneven and imperfect**

Perhaps even more worrying than treatment’s failure to reach people who died, are those drug-related deaths which happened despite current or recent treatment contact – over half the deceased [in Scotland](#) in 2014. A protective effect is best established and at its peak in substitute prescribing programmes, while in England, it [was not apparent](#) at all for standalone psychological treatments. If being in treatment does shield patients from drug-related death, in the immediate period after the shield is removed, rates increase. In some cases this will be because the reasons for dropping out/being forced out of treatment, such as return to dependent illegal drug use, are also risk factors for overdose. However, in England ‘successful’ planned treatment exit is no less likely to result in death than unsuccessful or unplanned exit, suggesting that even after these apparent successes, relapse is common, perhaps because inadequate attention has been paid to preparing patients for discharge and monitoring and supporting them after they leave.

### **Impact on drug-related deaths differs with the treatment**

While treatment is generally associated with reduced mortality, in this respect, not all treatments are equal. A [study](#) which found what looked like a significant protective effect of treatment in England, also conveyed the more specific message that opiate-

dependent patients should be engaged and retained in substitute prescribing programmes until there is little risk of their relapsing after leaving. The findings [led commentators](#) to recognise substitute prescribing as the “gold standard treatment” for opioid addiction, one which informed prospective patients may choose to reject, but which should never be denied them due to lack of access.

### **Curtailing maintenance prescribing will lead to more deaths**

If in life-preserving terms, substitute prescribing really is the “gold standard treatment” for opioid addiction, it follows that even if other modalities take its place, curtailing methadone maintenance and allied treatment will cost lives. Curtailing maintenance is exactly what the UK government has been attempting to do, an effort for which some success has been claimed.

During 2008 to 2010 national policy in England and Scotland turned away from the attempt to reduce harm from continuing drug use and towards abstinence-based recovery from addiction, favouring drug-free approaches like residential rehabilitation and [persistently seeking](#) to limit the scope and duration of maintenance prescribing. From this perspective, being maintained on methadone or buprenorphine is simply another addiction to be avoided or ended as soon as possible. The policy’s administrative embodiment in England was a performance indicator which linked funding for treatment services to the proportion of patients who leave treatment free of dependence and do not return within six months – [an incentive](#) to get patients out of treatment sooner rather than later. In contrast, recent studies in the UK have emphasised that the lifesaving benefits of maintenance prescribing are maximised by long-term retention (1 2 3). In line with the evidence, expert advisers for the UK as a whole and for [Scotland](#) have stressed the need to extend and expand maintenance prescribing in order to curb the rise in drug-related deaths.

### **Concern that government recovery agenda risks adding to the deaths**

Rhetoric and performance indicators antithetical to long-term treatment seem as yet only partially to have affected practice, and even if they have, it may be many years before the impact on deaths can be established. Establishing this would require studies not yet done. Meantime, the fear is that at the least such policies do not help counter the age-related increase in opioid overdose deaths, and at worst, that they risk contributing to it by prioritising treatment exit, deterring entry into substitute prescribing programmes, and tipping the balance of treatment away from these programmes and towards detoxification and drug-free rehabilitation and support.

One reason for these concerns is the relative efficacy of maintenance prescribing in preventing deaths compared to other treatment modalities. Another is that the offer of legal access to opiate-type drugs [attracts](#) opiate-dependent patients into the treatment system, rapidly reducing heroin injecting and illegal opiate use and affording improved access to harm-reduction advice and medical care. Among the concerned voices, hardest to dismiss are those of the UK government’s own drug policy advisers, who [warned](#) that “encouraging people to leave treatment may increase their risk of dying if they are not able to sustain abstinence”. If this is the case, it would cast a worrying shadow over the claim celebrated in the Conservative Party’s [2015 election manifesto](#) to have “reformed drug treatment so that abstinence and full recovery is the goal, instead of the routine maintenance of people’s addictions with substitute drugs.” Perhaps an expression of this policy, in both Scotland and England, prescriptions for opiate substitute drugs and especially methadone have been steadily falling since 2010, the year the UK government published its [recovery-oriented](#) national drug strategy, falls not entirely accounted for by a reduced opiate use problem or opiate treatment caseload.

### **Is methadone part of the solution – or part of the problem?**

Across the UK there has been concern that methadone – prescribed partly in order to save lives at risk from untreated heroin addiction – is itself implicated in many deaths, and that despite recent downturns, over the longer term these have markedly increased. But methadone and allied maintenance medications save lives as well. The balance between these opposing pressures will depend on how the treatments are implemented, but the evidence is that in the UK and internationally, the balance has been strongly in favour of the medications.

### **National naloxone programmes across the UK – but not in England**

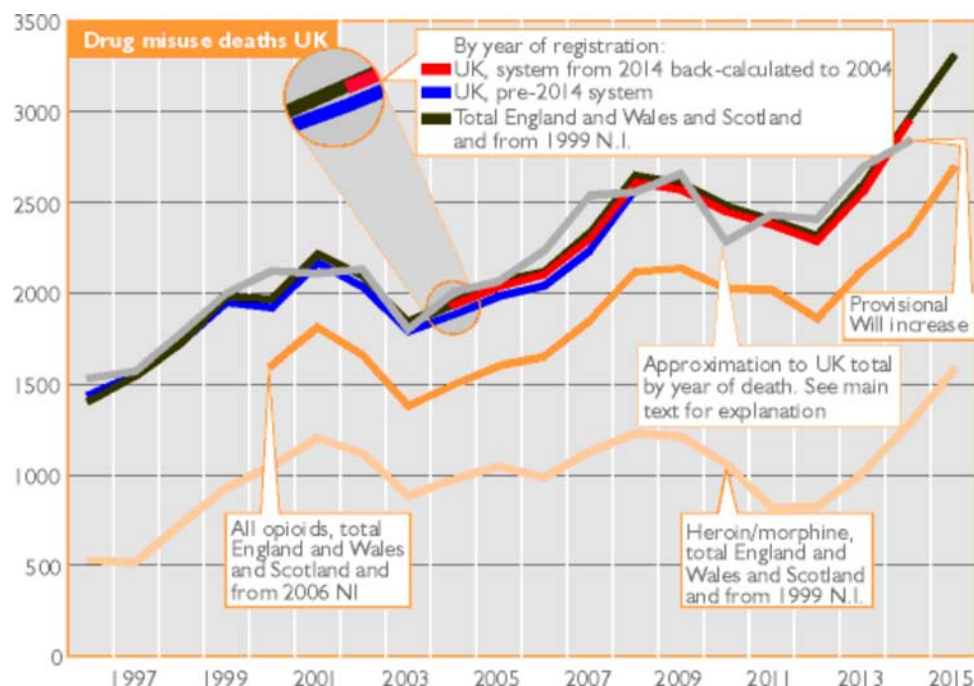
The subject of [another hot topic](#), here we only briefly acknowledge the importance of the advent of programmes training drug users and their associates to administer naloxone, a drug which rapidly reverses the effects of opiate-type drugs, including the respiratory depression which causes overdose. Naloxone [became the main new hope](#) for


curbing the death rate after in 2005 UK law was amended to permit emergency administration by any member of the public. The drugs naloxone reverses are not the sole cause of overdose deaths – benzodiazepines and alcohol have a big role – but across the UK, 88% of drug poisoning deaths in 2013 involved opiate-type drugs. Naloxone kits given medical approval and a relaxation of prescription-only requirements to permit drug services in England and Wales to supply them has aided distribution. Of all the UK nations, England has yet to take advantage of these developments to mount a coordinated national programme.

## New public health indicator signals national concern at rising deaths

With minor variations, across the UK the deaths concerned [are defined](#) as those where the underlying cause is registered as drug abuse or drug dependence, and/or drug poisoning deaths involving substances controlled under the Misuse of Drugs Act. Officially referred to as drug misuse or drug-related deaths, fatal 'drug overdoses' is a looser but generally appropriate shorthand, though many are suicides or of undetermined motivation.

An important new source of data yet to make its mark on the debate is the [2016 revision](#) to the Public Health Outcomes Framework for England – indicators of the nation's health by which local areas are held to account. A sign of national concern, the revision added the rate of drug misuse deaths per million of an area's population to the indicators. According to the Department of Health, it was a response to "a rising trend in drug related deaths over the last few years," added because "Local authority action, including the quality and accessibility of the drug services they commission and how deaths are investigated and responded (sic) has an impact on drug misuse death rates." This harm-reduction indicator now takes its place alongside what the framework terms "recovery outcomes" in the form of successful completion of treatment followed by non-return within six months.




Despite some complications (click to [unfold](#)  supplementary text for details), the consistent picture is that totalled across the UK deaths related to drug misuse rose steeply between 2012 and 2015, driven by a corresponding rise in deaths involving opiate-type drugs, and in particular, [heroin](#) [chart](#) right [▶▶▶ more ...](#)

The chart shows that the three ways (red, black and blue lines, described in the top label) of counting deaths registered during a particular year in the UK yield figures so close that they can be considered to form an unbroken series from at least 1996 to the latest year, 2015, when deaths registered in England, Wales, Scotland and Northern Ireland totalled 3,299, 67% up on the 1,976 in 1999. Before then figures are not available for Northern Ireland; subtracting deaths registered there creates a consistent series lasting from 1996 to 2015. Over this time deaths registered in England, Wales and Scotland more than doubled, up by 126% from 1,410 to 3,185. Starting from 2013, the dip from 2008 to 2012 can now be seen to have decisively reversed.

Complicating this assessment is the fact that deaths are often not registered in the year in which they occurred but a year or more later. However, the post-2012 upward trend in registrations is confirmed by (grey line) figures **almost entirely** relating to deaths which actually occurred in the year in question. This total confirms that the upward trend started in earnest in 2013, with a rise of 18% from 2,404 in 2012 to a provisional 2,834 in 2014 – almost certain to climb nearer to 3,000 when all deaths that year have been registered. From their steep dip to 2,280 in 2010, the increase by 2014 has been at least 24% and **will probably** turn out to be about 29%. **Another set** of differently compiled figures totalling UK overdose deaths which actually occurred in the focal year confirm the post-2012 upturn.

The continued dominance of opiate-type (or 'opioid') drugs (deep orange line) in the figures, and the correspondence in the shapes of the curves, suggests that deaths involving these drugs and in particular those involving heroin (orange tint) are driving UK trends in total deaths. Drug misuse deaths registered in the year increased by 68% between 2000 and 2015, and those involving opioids by almost exactly the same proportion, rising to 2,683 or 81% of the total. Public Health England's **2015 report** to the European drug misuse agency says 88% of drug poisoning deaths which actually happened in 2013 involved opioids, a proportion which has remained broadly similar since 2004.

The **supplementary text**  explains the statistics referred to above in greater detail.

**Supplementary text.** [Click to close](#) 

Deaths related to drug misuse **are defined** in the UK as those where the underlying cause is registered as drug abuse or drug dependence, and/or drug poisoning deaths involving substances controlled under the Misuse of Drugs Act.

The "complications" **referred to above** in assessing trends in these deaths and comparing the nations of the UK **derive largely** from the fact that deaths *registered* in a particular year did not necessarily *occur* in that year. Due to the delay in inquest verdicts, the registration delay in England and Wales meant that nearly half the drug misuse deaths **registered in 2015** actually happened in previous years, and also that many 2015 deaths will not have been counted by the end of the year. Previous years were subject to sometimes longer and sometimes shorter delays, so trends across years partly reflect the degree of registration delay. In Scotland the delay is very short, meaning that the UK total is an amalgam of deaths from differing time periods, and that comparisons between registered deaths in Scotland on the one hand and England and Wales on the other relate to somewhat different periods.

Another complication is that the list of drugs controlled under the Misuse of Drugs Act has recently been added to. All figures for **England and Wales** and for **Scotland** back to the year 2000 have been revised so they tally with the new set of controlled drugs, and where available this account uses these figures. It seems that a similar recalculation was not done for **Northern Ireland**, presumably partly accounting for the increase in deaths since 2010 **when mephedrone was controlled** and from 2014 when tramadol was controlled.

Using these registration-based figures, Public Health England's **2015 report** to the European drug misuse agency (the EMCDDA) collated drug misuse deaths across the UK. It takes the data up to 2014, when the definition of a drug misuse death changed slightly. These figures were back-calculated to 2004 and are represented by the red line in the **chart** above. The older system (blue line) differed very little **and extends** the series back to 1996. For 2015 neither figure is available, but we can (black line) total the figures for **England and Wales**, **Scotland** and Northern Ireland (1 2). These figures tally almost exactly with the official UK totals reported to the EMCDDA, effectively extending the UK series another year to 2015, and showing that the steep upward trend of the previous two years had continued.

All these figures are based on the year the death was registered. Also published for **England and Wales** are deaths by year of occurrence, though at the time of writing the total for 2014 will be an underestimate as many deaths will not have been registered by the cut-off date of the end of 2015. The figures for Scotland nearly all relate to deaths within the year in question, leaving only the relatively few deaths in Northern Ireland subject to registration delay. Adding all these figures together will closely approximate to a UK total of drug misuse deaths which actually occurred in the relevant year, represented by the grey line in the **chart** above.

The post-2012 upturn seen in these figures is also seen in another set of within-year figures for the UK as a whole found in Public Health England's **2015 report** to the EMCDDA. To be sure of gathering nearly all the relevant data, the series ended at 2013. Though these figures removed the complication of the registration delay, they add another by using a **different definition** of a drug-related death to that used in the UK. For the EMCDDA the definition is, "Deaths caused directly by the consumption of one or

more illegal drugs”, a formula which omits the underlying causes of drug abuse or dependence as further reasons to define a death as related to drug misuse. Despite this difference and the registration delay affecting other figures, there is a broad correspondence between the number and trends in drug misuse deaths by year of registration reported in the UK, and the EMCDDA's data on deaths caused by consuming illegal drugs which actually occurred the year in question. In particular, the figures confirm that an upward trend started due to the increase in deaths which occurred in 2013, a rise of 13% from 2,178 the year before to 2,449. From their dip to 2,058 in 2010, the rise amounted to 19%.

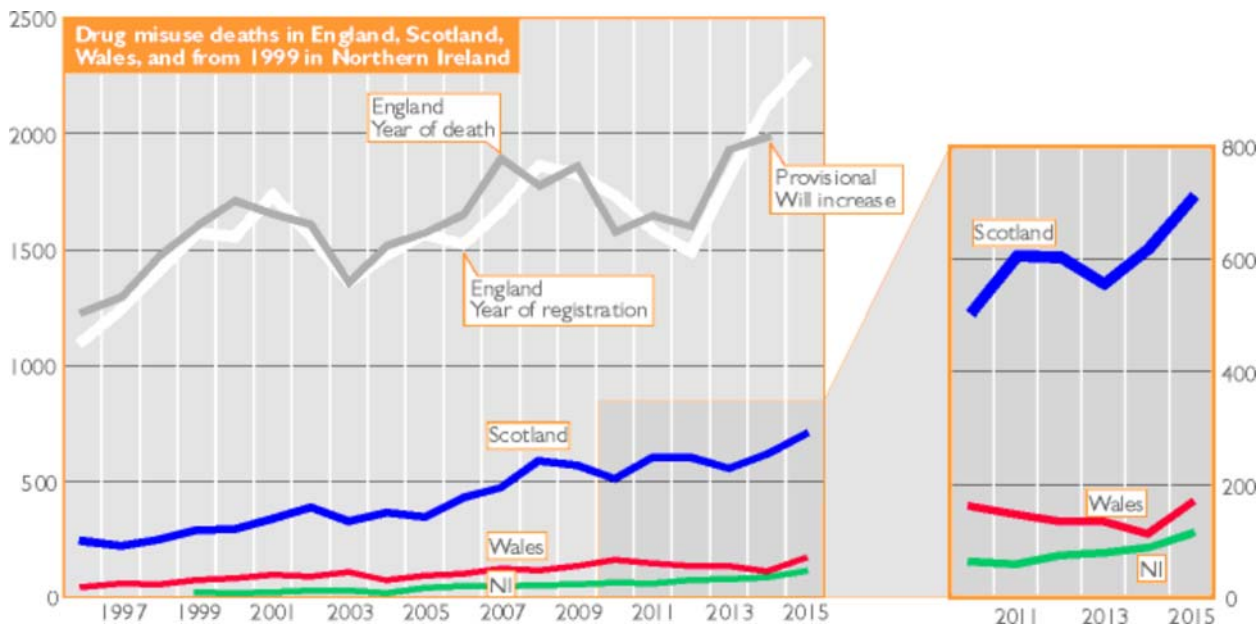
One complication peculiar to Scotland is the change between 2007 and 2008 in the relevant question asked of pathologists from asking about drugs “involved in this death” to “implicated in, or which potentially contributed to, the cause of death”. It is believed this may have contributed to the apparently large increases in the proportions of deaths attributed to methadone and benzodiazepines. Since 2008 Scotland has also asked about drugs found in the body, even if not considered to have helped cause the death. Comparing these figures with those in which the same drug got part of the blame shows that heroin and methadone are nearly always considered contributors to the death, but in most cases benzodiazepines and alcohol are exonerated, despite their [ability](#) to tip a non-fatal opioid overdose into a fatality. In situations where several drugs are found, it becomes a matter of judgement which is blamed for the death. There must be a concern that it is partly heroin and methadone's illegality and infamy which leads them to be fingered more than other drugs.

 [Close supplementary text](#)

### Upturn seen in every country of the United Kingdom

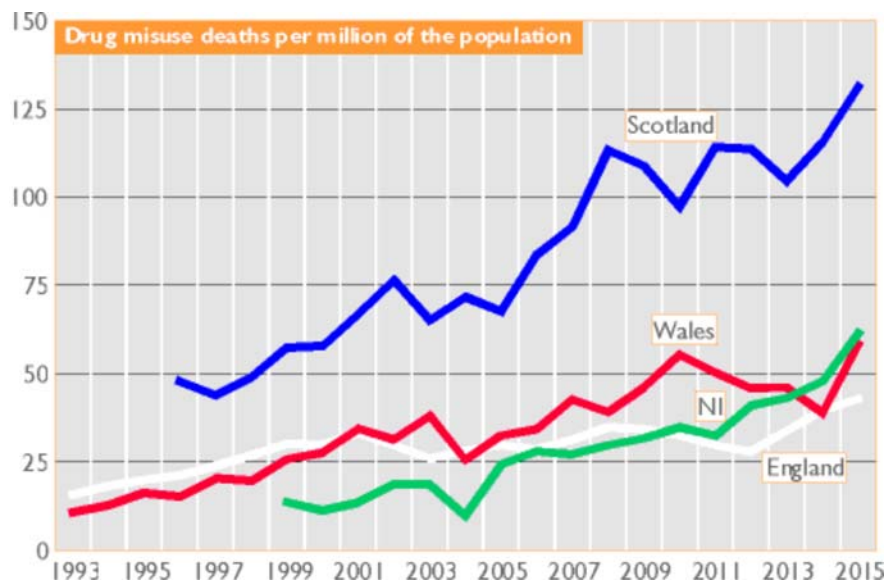
Devolution in the UK has created ‘natural experiments’ in the implementation of different national policies, and the opportunity to assess their impacts on drug-related deaths. At least at the level of rhetoric, during 2008 to 2010 England and Scotland [turned away](#) from the attempt to reduce harm from continuing drug use and towards abstinence-based recovery from addiction. The same trend found an echo in Wales, though that nation [adhered](#) to an “approach to tackling substance misuse ... based on the core principle of harm reduction”. In Scotland, Wales, and Northern Ireland, national naloxone distribution programmes sought to counter opioid-related overdose deaths, while England's response was localised and patchy [▶ below](#). But in England's favour was the legacy of the [mission](#) of the [National Treatment Agency for Substance Misuse](#) to double the number of patients in drug addiction treatment from 100,000 in 1998 to 200,000 in 2008. This [they did, with an eye primarily](#) on reducing crime and improving public health, placing methadone maintenance and allied programmes in the vanguard. Most of the UK data we have on treatment's impact on drug overdose deaths ([▶ below](#)) reflects the fruits of this effort.

To understand the possible effects of these policies first we need to break down the UK trends into those for the constituent nations. Despite differences in national policies, the [chart below](#) shows that [every country](#) of the United Kingdom saw an upturn in drug misuse deaths in 2015, continuing a recent trend first seen in 2013 in [England](#) and 2014 in [Scotland](#). In Northern Ireland ([1 2](#)) some of the upturn in and after 2013 may have been due to the inclusion of new drugs in the Misuse of Drugs Act, but probably not all [▶▶▶ more ...](#)



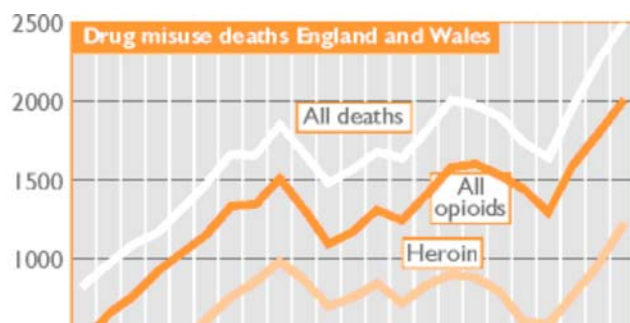
Scotland's figures relate almost entirely to deaths within the year in question, but the main figures for the remaining countries suffer from registration delay, which means many deaths registered in a year will actually have happened the previous year or even earlier, and many which did happen in the focal year will yet to have been recorded. However, for England (grey line) and for Wales (not shown) we do have data up to 2014 on deaths which actually occurred in those years, though the 2014 data is incomplete and figures will rise. These statistics confirm that in England the recent rise in deaths started in 2013 but show that in Wales it started in 2014 rather than 2015, with an increase from 124 in 2013 to 143, a figure which will rise when more deaths have been registered. The further increase in registered deaths in 2015 in both countries suggests this upward turn in deaths within a year has continued.

A more meaningful way to compare countries and trends over years is to calculate rates of deaths per million of the population. On this yardstick (broadly but not strictly comparable across the



nations) we see relatively sharp recent increases in each of the nations, but also that in each this looks like the continuation of a longer term trend ▶ chart right. The chart also indicates that for its population, since at least the mid-90s there have been far more deaths in Scotland than in each of the other countries of the United Kingdom – a record examined in more detail below.

Charting total and opioid-related deaths in each of England and Wales (overwhelmingly reflecting trends in England), Scotland, and Northern Ireland, shows that trends in total deaths closely correspond to trends in deaths due to opioid drugs such as heroin and





methadone [▶ charts right](#). The implication is that it is trends in use of these drugs which drives fluctuations in the totals for each nation as well as for the UK as a whole.

### Death rates far greater in Scotland

Of the UK nations, drug-related deaths and concern over these deaths are at their height in Scotland, where a 'drug-related' death equates to a 'drug misuse' death in England and Wales. There are complications in making these comparisons, but the broad implications of the figures are that Scotland's death rate per million of the population is greater partly because it has a greater concentration of problem drug users, but also because within a given period, each problem drug user in Scotland is around 50% more likely to die due to drug misuse than their counterparts in England [▶▶▶ more ...](#)

An [analysis](#) of deaths up to 2015 Scotland showed that the increases in four of the last five years, including 2015, are a continuation of a "clearly upwards" trend evident since at least 1998, largely due to deaths judged to have been due to drug misuse or accidental overdose rather than suicide.

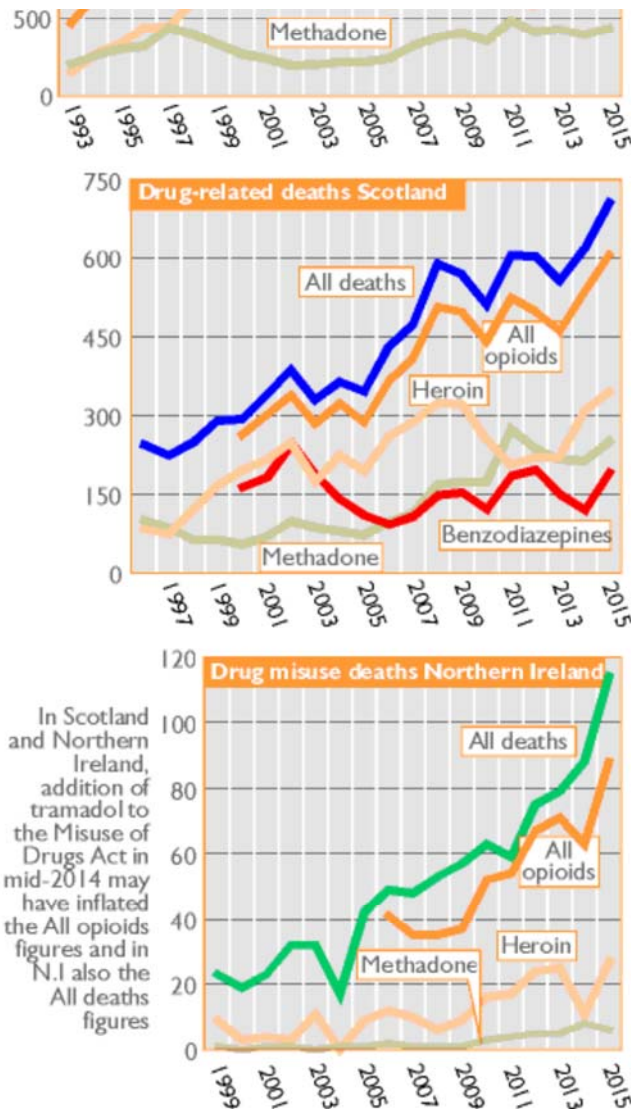
To date the rises have ended in a record tally of 706 deaths in 2015. The figure looks small compared to the 2,300 registered in England, but at 131.4, it was over three times greater [per million](#) of the population than the 42.9 in England and well over twice the per-million rates in Wales and Northern Ireland [▶ chart below](#).

Rather than each drug user being more likely to fatally overdose, Scotland's greater death rate could simply be due to a correspondingly larger drug problem in relation to its population. To help settle this question, for each of England, Scotland and Wales, we have estimates of the number of problem drug users, trends in which are discussed [below](#). Reflecting differing drug scenes and concerns, in England 'problem drug users' are defined as users of illegal opioids or crack cocaine, but in Scotland as regular users of illegal opioids or benzodiazepines or patients prescribed methadone in the treatment of their addiction. Wales includes people injecting, or those using opioids, cocaine and/or amphetamines regularly and for prolonged periods, including patients prescribed opioids such as methadone.

Latest estimates are for 2011/12 in [England](#), 2012/13 in [Scotland](#) and 2014/15 in [Wales](#). Assuming these estimates have remained valid, it can be calculated that 11.5 in every 1000 problem drug users died in Scotland in 2015 due to drug-related causes. For registered deaths, in England the corresponding figure was 7.8, meaning Scotland's death rate was 47% higher [▶ chart below](#). For deaths related to opioids the corresponding figures were 9.9 and 6.8, making Scotland's rate 45% higher.

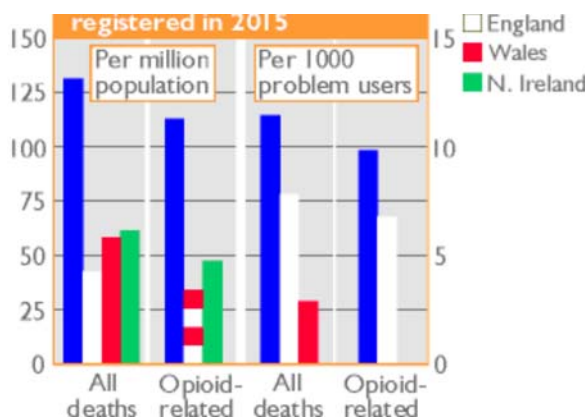
Wales is a special case, since of its estimated 58,186 problem users in 2014/15, well over half (32,418) were using stimulants only, an estimate which included amphetamines. Basing the death rate on all problem users yields a low rate of 2.9 drug misuse deaths registered in 2015 per 1000 problem users. Basing the estimate instead on problem opioid users raises it to 6.5, still well below the figure for Scotland and slightly below the corresponding figure for England of 7.8.

Though it takes us back in time, we



Drug misuse deaths ■ Scotland

can move to stronger ground by comparing drug misuse death rates for the last years for which we have estimates of the numbers of problem drug users (2011/12 in England and 2012/13 in Scotland), and by using for England the figure for deaths which actually occurred during that year, matching the way the figures are generated in Scotland. On this basis the comparison with England looks worse for Scotland – a rate of 9.8 versus 5.6, 75% higher.



Different definitions of what counts

as a problem drug user mean like is not quite being compared with like, and assumptions have been made that recent estimates of problem drug user populations remain valid. Nevertheless, the broad implications of these figures are that Scotland's death rate per million of the population is greater partly because it has a greater concentration of problem drug users, but also that this is not the whole story. For every two problem drug users who died due to drug misuse in 2015 in England, probably nearly three died in Scotland, and the same is true of opioid-related deaths in particular. This order of disparity is longstanding and consistent [▶ chart below](#). Due to differences in the definition of a problem drug user, the disparity may be even greater – see [👁️ supplementary text](#).

[Supplementary text](#). [Click to close](#)

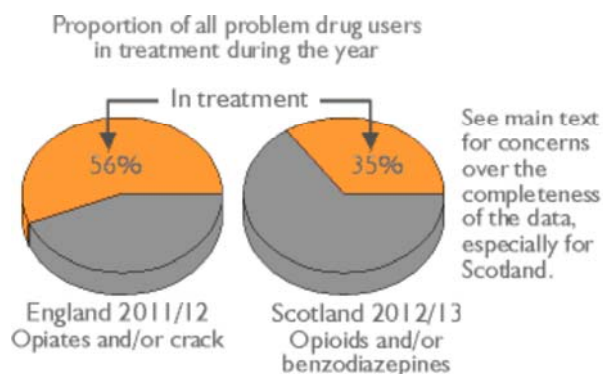
The disparity in the risk of drug-related death per problem drug user may be even greater than the figures suggest, because Scotland includes methadone patients in its estimates of problem drug users. In so far as these patients do not get caught in other nets used to estimate problem drug user numbers, they will inflate those estimates in Scotland relative to England, and therefore also deflate the rate of drug-related deaths per 1000 problem drug users. In 2012/13 in Scotland the estimate of 61,500 problem drug users was based on 23,255 individuals of whom 11,885 were known because of their contact with treatment services but not represented in other data sources. Several thousand can be assumed to have been on methadone prescriptions and to have added to Scotland's problem drug user total and decreased its death rate per 1000 users relative to England.

[👁️ Close supplementary text](#)

### Treatment penetration may partly explain 'Scottish effect'

Given the evidence that treatment protects against overdose deaths ([▶ below](#)), part of the reason for the discrepancy in death rates between Scotland and England may be that relatively few problem drug users in Scotland are under that protective umbrella. Other influences raising Scotland's drug-related death rate may be the same mix of factors which for decades have caused overall mortality rates there [to exceed](#) those of the rest of the UK [▶▶▶ more ...](#)

In 2012/13, of an [estimated](#) 61,500 problem drug users in Scotland, 21,314 [were identified](#) as having been in treatment during the year [▶ chart right](#). In 2011/12 the corresponding figures for England were 293,879 and 164,671 – 56% of all problem drug users engaged in treatment, much higher than in Scotland. For opiates with or without crack, in England the [proportion](#) was even higher – 62%. In Scotland the recent turning away from maintenance prescribing and methadone in particular may also have meant that after 2010 the treatment mix became less geared to preserving life [▶ below](#).



The comparison between the two countries is complicated by different definitions of problem drug use: in England, misuse of opioids or crack cocaine, in Scotland, misuse of opioids or benzodiazepines or being prescribed methadone for the treatment of addiction, the latter inflating the figures to an unknown degree [▶ supplementary text above](#). Both systems for counting numbers in treatment focus on specialist treatment and miss patients treated in other settings. The situation is particularly unsatisfactory in

Scotland, which routinely publishes only numbers of patients being newly assessed for treatment, not numbers *in* treatment during a year. By supplementing this data with direct information from treatment services, the exercise to estimate the number of problem drug users in 2012/13 could identify 21,314 opioid or benzodiazepine users as having been in treatment during the year – yet for the same year an estimated minimum of 25,311 patients were being prescribed methadone in Scotland, and the actual figure was probably nearly 30,000. Also, on the basis of data submitted by treatment services on times between referral and treatment entry, it seems that in 2014/15 the recorded numbers newly assessed for treatment had missed 28% of patients.

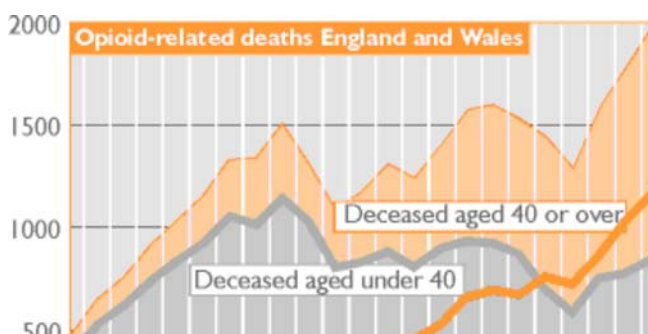
Whatever the causes, consistently and for decades, something in the Scottish system for dealing with drugs, the nature of drug use in that country, or the vulnerability of its drug users, has generated greater risk than in England. This disparity is, however, not limited to drug misuse deaths. Overall mortality rates in Scotland have been greater than in the rest of the UK since the 1920s. Adjusted for sex and age, across population survey studies the difference amounted to 1.4 deaths in Scotland for every one in England, a differential only partially attenuated when socioeconomic variables, smoking, drinking and some health measures were factored in. Contributors to the excess deaths were nearly a five times greater death rate due to alcohol-related causes and over three times greater due to drug poisoning, figures which stood despite adjustments for smoking and drinking among the respondents. It seems that the greater drug-related death rate in Scotland is partly explained by the greater concentration of problem drug users in the country, and perhaps partly too by the largely unknown influences which lead to more deaths overall. It is unclear how much is left which can only be attributed to more risky substance use and/or a less (in life-preserving terms) effective treatment system.

### Fatalities increasingly involve older heroin users

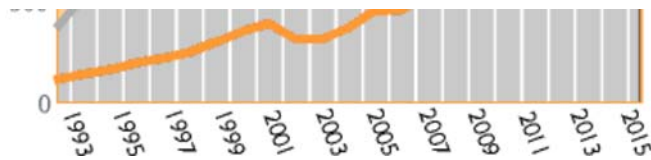
Official sources and government advisers have interpreted the recent upturns in drug misuse deaths as the continuation of a longer-term trend due to the ageing of the heroin-using population as fewer young people join their ranks, leaving the overall population increasingly dominated by older and more multiply ill users. Due to their health weaknesses, social isolation and perhaps other factors, each of these older, long-term heroin users is, it is argued, more likely to suffer a fatal overdose than younger heroin users, an argument investigated in a [subsequent section](#) [▶▶▶ more ...](#)

The relevant chapter of Public Health England's 2015 report to the European drug misuse agency offers a UK-wide perspective. It was based primarily not on drug misuse deaths as defined for domestic purposes, but on an EU definition of poisoning or 'overdose' deaths involving any illegal drug. Additionally, its figures related to the year the death occurred, so were compiled only up to 2013. Since 2004 these figures have generally reflected trends in the domestic figures [charted above](#). Like those, they rose steeply in 2013 to a record 2,449 fatal overdoses, up 12% on 2012. It was the comments on the age of the deceased which were most significant. Averaging 37.6 years in 2004, the figure rose by four years to 41.6 in 2013. Compared to 2008, the number of drug-related deaths decreased for all age groups below the age of 40 and increased for all age groups above this point. Perhaps signalling a waning of the age differential in trends, in the latest years between 2012 and 2013 deaths rate increased in all age groups except ages 20–24.

Given the dominance of opioids in the figures, this age differential raises the possibility that a long-term ageing of the opioid-using population accounts for the long-term upward trend in deaths. The presumed mechanism is the accumulation of poor health among long-term heroin users, leaving on average each older user more prone to overdose death than a younger one. Coupled with the ageing of the opioid-using population, the effect would be rising drug-related and specifically opioid-related deaths. Signs of this effect are a feature of the data not just for the UK as a whole, but also for its constituent countries. In [England and Wales](#) in the 1990s, opioid-related deaths were far more numerous and rose more steeply among the under-40s (grey block and line in [chart right](#)) than in older groups (orange block and line). But from the turn of the century the under-40s began a general downward trend while the 40s and over continued to die in greater numbers, until from 2011 they were the majority, though the under-40s resumed an upward trend in 2013.



Scotland has no equivalent opioid-specific figures over an extended period, but the data for all drug-related deaths will be dominated by those involving opioids. These figures



suggest an increase in the age of those dying from drug misuse in general and from opioids in particular. In the late '90s half of all drug-related deaths were of people aged between 22/23 and 34/35. By 2015 the corresponding range had shifted up over ten years to between 34 and 49 years of age. Between 1996 and 2000 annual deaths averaged 191 among under-35s but just 68 among older groups. By 2011 to 2015 the order had decisively reversed, under-35s accounting for on average 205 deaths a year and older groups 396. This effect was not an artefact of changes in the age make-up of the general population, because it was seen also in deaths per 1000 of the population in each age group, a feature of which was the increasing death rate among the over-35s while it fell among the youngest adults and was relatively stable among 25–34-year-olds.

Slightly differently constituted data on drug-related deaths in Scotland confirmed the ageing trend, the proportion of all drug-related deaths among users aged 45 and over more than doubling from 13% in 2009 to 29% in 2014. A related trend was that from 46% in 2009, the proportion of the deceased recorded as suffering from a medical condition in the six months before they died increased to over 60% in 2012 and succeeding years, ending at 63% in 2014. Perhaps significantly, in 2012–2014, 24% to 27% of the deceased were recorded as having a recent respiratory condition, up from 15% to 17% during the previous three years; respiratory failure is the main cause of opioid-related deaths. Not just respiratory problems, but the number of overlapping medical conditions became more numerous between 2009 and 2014.

How much of these trends were due to better identification of co-occurring medical and social conditions is unknown, but when Scotland's drug-related deaths analysts [joined the dots](#), they associated increased age at drug-related death with the increasing proportions of the deceased who were long-term drug users, long-term injectors, had recent alcohol-related problems, were living alone, consuming drugs and dying at home, and suffering (increasingly multiple) medical and/or psychiatric conditions. There were, they believed, important implications for service provision: "The complex health and social care needs of this group are likely to result in simultaneous increases in demand for services, increased risk of death due to co-morbidities[,] and increased exposure to periods of elevated overdose risk. However, older drug users in particular are reported to be less satisfied (and consequently, at higher risk of non-engagement) with drug treatment services due to perceived lack of fit with their needs. Non-engagement consequently increases the isolation and loneliness experienced by older drug users and may also increase the risk that an overdose may occur in circumstances where there are limited opportunities for intervention (eg, when alone or when others present do not have the capacity to help)."

### Mortality and treatment trends said to reflect an ageing heroin epidemic 'bulge'

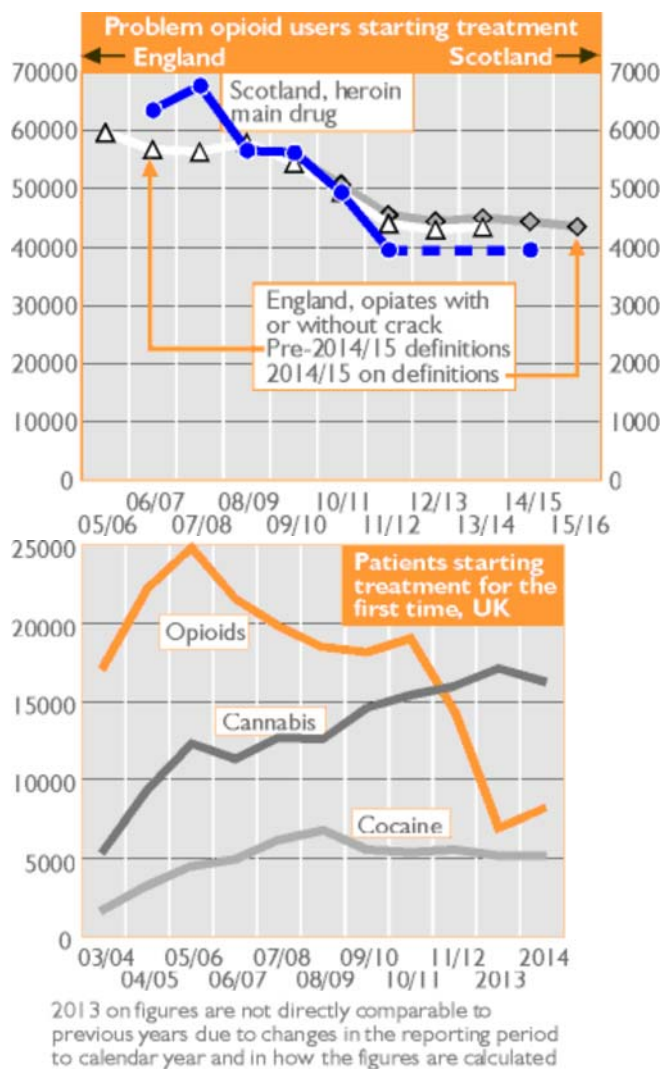
In England and in Scotland, the ageing of those suffering an opioid-related death has mirrored the ageing of the opioid-dependent treatment population, both of which reflect general population trends consistent with an ageing population of long-term heroin users who started using in the mid-90s or before. Because they are only partially being replaced by younger recruits, the result is an increase in the average age of problem heroin users – the trend thought to account for increases in drug-related deaths, one not fully counteracted by diminishing overall numbers [▶▶▶ more ...](#)

These relationships were apparent in England in the ageing of the treatment population whose primary problem drug involved an [opioid](#) like heroin, with or without crack cocaine. The number of 18–24-year-olds starting treatment for opioid problems fell precipitately from 11,309 in 2005/06 to 2,729 in 2014/15, while patients aged 40 or over rose from 8,787 to 15,487 (1 2). It was a [similar story](#) among the entire treatment population, including those continuing in treatment from previous years, with the number of 18–24-year-olds whose primary problem drug was an opioid with or without crack plummeting from 22,581 in 2005/06 to 6,272 in 2013/14, while corresponding patients aged 40 or over more than doubled from 25,687 to 61,437. According to Public Health England, this ageing cohort is often in poor health, with a range of vulnerabilities associated with long-term drug use including social isolation and more entrenched, hard-to-treat addictions (1 2).

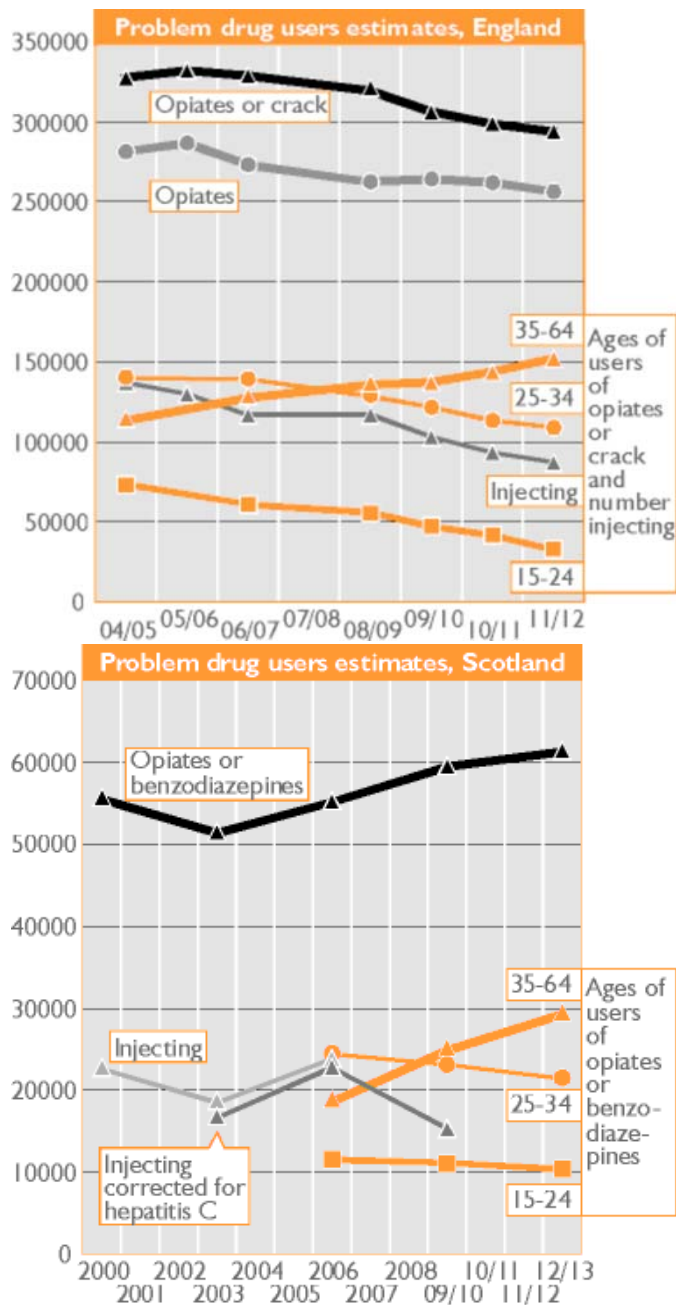
In Scotland too, the population being assessed for a new drug treatment episode at specialist services [has been ageing](#). In 2006/07, almost 30% were aged 35 and over rising to 48% in 2014/15, and their median age rose from 30 years to 34. Over the

same period the proportion of under-25s presenting for treatment who had recently used heroin fell from 58% to 23%. There was a fall too among those aged 35 and over, but it was much less steep, down from 67% to 58%.

Diminishing recruitment of young adults into treatment for problems related to opiate-type drugs has led to an overall fall in the numbers starting treatment (new to treatment or returning after a break) for these drug problems in both England (1 2) and Scotland (chart below left) and an even steeper fall across the UK in the numbers starting treatment for the very first time, down from a peak of 24,813 in 2005/06 to 6,940 in 2013, slightly recovering to 8,122 in 2014 ▶ chart below right.



In turn treatment trends in England were said to mirror general population trends consistent with an ageing population of heroin users who started using in the mid-90s or before ▶ chart below left. In the English studies problem drug users were defined as users of opiates and/or crack whose use has brought them into treatment or criminal justice contact. The estimated number aged under 25 more than halved from 72,838 in 2004/05 to 32,628 in 2011/12. Over the same period, estimates for the numbers aged 35 to 64 rose from 114,459 to 152,127. Total numbers were estimated to have fallen from 327,466 to 293,879 and the number using opiates from 281,320 to 256,163. Of special relevance to the risk of overdose death, numbers injecting opiates or crack were estimated to have fallen steadily from 137,141 to 87,302 (1 2). Underlying these trends was a reduced influx of new (and therefore relatively young) users of opiates or crack. Depending on the methodology, the reduction amounted to 20% or 45% between 2005 and 2013, when analysts could be confident that no more than 10,000 started using these drugs, a rate per 1,000 of the population 11 times lower than some local estimates from the epidemic years of the 1980s and early 1990s.



In contrast to England, recent estimates suggest overall numbers of problem drug users have not fallen in Scotland, but there too there is some evidence of the population ageing (1 2) ▶ [chart above right](#). The studies in Scotland defined problem drug use as the routine and prolonged illegal use of opiate-type drugs and/or benzodiazepines, plus patients being prescribed methadone. Overall estimates reached their peak at 61,500 in 2012/13 (the latest figures), having started at 55,800 in the year 2000. The latest figure for those among these users who were injecting was 15,200 in 2009, taking into account the fact that some people recorded as injectors infected with the hepatitis C virus will no longer be injecting, a methodology seen as an advance on earlier estimates (1 2). Both sets of figures are given in the chart, indicative of a substantial reduction in the numbers of injectors between 2006 and 2009, when the number of injectors also fell in England. Also echoing trends in England, in Scotland over the period 2006/07 to 2012/13 numbers of younger problem users aged 15–34 fell from 36,200 to 32,000 while older users increased from 18,900 to 29,500.

### Upturns due to “prematurely ageing” heroin users, say drug policy advisers

While the figures presented above are consistent with the ageing hypothesis, only expert analysis could eliminate alternative scenarios. Above all, this has been provided by an investigation from the Advisory Council on the Misuse of Drugs into opioid-related deaths in the UK. With unpublished as well as published data at their disposal, they could “assert with a good degree of confidence that the ageing profile of heroin users with increasingly complex health needs (including long-term conditions and poly-substance use), social care needs and continuing multiple risk behaviours has

contributed to recent increases in drug-related deaths" ▶▶▶ [more ...](#)

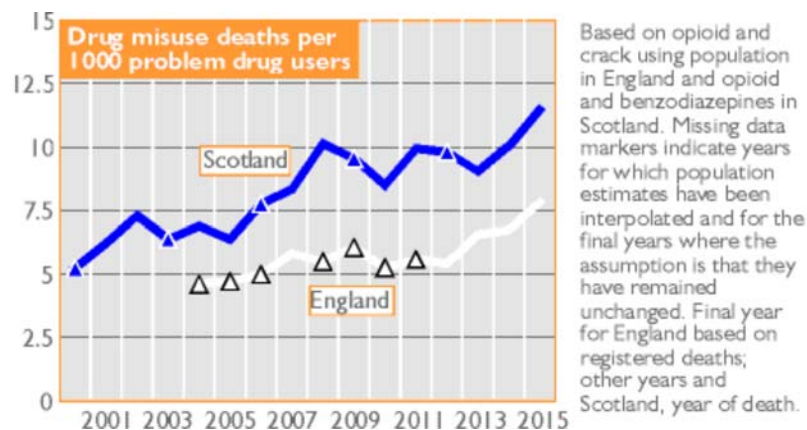
According to these official drug policy advisers to the UK government, between 2010 and 2012 reduced availability of heroin caused a dip in deaths which subsequently resumed their long-term upward trend, driven by a "prematurely ageing" cohort of heroin users. Trends in both England and Wales and in Scotland suggested to the analysts that largely we are witnessing the aftermath of the heroin 'epidemics' of the early 1980s to the mid- to late-1990s. People who started use in those eras are now ageing and dying due to drug-related causes at an increasing rate, but not being replaced to the same degree by younger recruits who in their turn age and suffer drug-related deaths. The implication is that unless there is another opioid use epidemic, the 'bulge' of deaths due to those who started heroin use in the 1980s and 1990s will eventually diminish in size and with it overall opioid-related deaths. But before things get better they are, said the Advisory Council, likely to get worse as the diminishing bulge remains substantial and increases in vulnerability due to increased age and continued heroin use despite the expanded treatment offer of the 2000s.

Well before the Council's report, in 2010 Scottish researchers [had argued](#) that the age-related increase in opioid-related deaths was the key reason why absolute numbers could not be used to evaluate the nation's naloxone programme. The impact of ageing [had also been](#) highlighted by an expert group convened by Public Health England, prompted by the increase in deaths in 2014 in England. As they saw it, when heroin purity and availability returned after the heroin shortages of 2010 to 2012, the "longer-term, persistent background rise" in drug-related deaths since 1993 resumed, driven by "an ageing cohort of heroin users, many of whom started to use heroin in the 1980s and 90s, who are now experiencing cumulative physical and mental health conditions that make them more susceptible to overdose."

### Are older long-term heroin users more likely to fatally overdose?

Attributing the increasing death rate to ageing depends on one critical assumption: that during a given period, longer-term, older users are more likely to fatally overdose than younger users with a shorter addiction history. Though it might seem natural, this assumption is not a given. The deaths concerned are mainly overdose deaths, not those due directly to age or to the development and progression of chronic diseases. Conceivably, older and more experienced users who have perhaps survived earlier overdoses would be more rather than less able to avoid fatalities. Only data and analysis can settle the issue of whether age is associated with increased risk due to accumulated ill-health, or decreased risk due to accumulated experience; what we know supports the increased-risk assumption (1 2) ▶▶▶ [more ...](#)

If the ageing of the heroin epidemic 'bulge' was indeed the underlying cause of trends in drug-related deaths, we would expect to see the death rate per 1000 problem drug users rising over the years when the average age of these users has also been increasing. In both



England and Scotland, there are signs this has been happening ▶ [chart right](#).

Interpreting these signs is, however, clouded by [complications](#) in comparing years and countries, and estimates for the final three or four years are weakened by the absence of recent analyses of the numbers of problem drug users in each country. If (as in the chart) the assumption is made that these numbers have remained unchanged, then the upward trends in the risk each problem drug user faces of a drug-related death would be substantial, more than doubling in Scotland from the equivalent of 5.25 per 1000 in the year 2000 to 11.48 in 2015, and in England rising 70% over the period 2004 to 2015, from 4.63 to 7.83.

Seeming to confirm that an ageing population of drug users would lead to an increase in deaths, in [Scotland](#) from 2011 to 2015 older problem drug users were the ones most likely to die from drug-related causes. Based on estimates of the age breakdown of all problem drug users in the country, at ages 35–64 each year on average 13.0 in every 1000 died compared to 7.6 for 25–34-year-olds and 4.0 for users aged 15–24. The

consequence will be that the greater the proportion of older people among the total population of problem drug users, the greater will be the overall death rate due mainly to drug poisoning.

These analyses of routinely collected statistics have been supplemented by studies in England and Scotland, which also found an increased risk of drug poisoning deaths in older drug users. By triangulating treatment and criminal justice databases, the [English study](#) identified 198,247 individual opioid users (93% using heroin) between 2005 and 2009. Their identifiers were matched to those of people who died during this period and whose deaths were registered up to September 2011. Of the deaths, 3,974 were among the 198,247 opioid users, about six times more than expected of their age and sex. Drug-related poisonings accounted for 43% of the fatalities, and how likely these were increased with age. At age 18–24 the best estimate for the poisoning mortality rate was equivalent to 19 deaths over 10 years for each 1,000 opioid users, though it may have been in the range from 16 to 23. By age 45–64 the same metric had more than doubled to 45, having steadily increased to 26 at ages 25–34 and 39 at ages 35–44 – a “highly significant, age-related increase in opioid users’ drug-related poisoning mortality rate that persists beyond 45 years of age”.

In [Scotland](#) the drug-related death rate among patients starting treatment for opioid-related problems between 1996 and 2006 was equivalent to 44 deaths over 10 years for each 1,000 patients. For every three deaths among patients and former patients aged under 34, there were four among older opioid users. Though deaths specifically due to hepatitis C were excluded, this age differential in the risk of drug-related death could entirely be explained by the greater likelihood that older people would be infected with hepatitis C – a calculation which could not be made for England.

A remaining puzzle in the statistics is that injecting strongly increases the risk of a fatal overdose ([1 2 3](#)), yet the reduction in estimated numbers of injectors in England between 2004 and 2012 (down from 137,141 to 87,302) and the reduction in Scotland from 2006 to 2009 (from 22,900 to 15,200) spanned periods when overdose deaths rose [▶ injecting numbers above](#).

### Short-lived dip in deaths was due to the heroin ‘drought’

The sharp dip in heroin-related deaths in England and Wales and in Scotland in 2010 to 2012/2013 [has been attributed](#) to a shortage of heroin on the illicit market resulting in its reduced use, partially compensated perhaps by resort to other opiate-type and sedating drugs. If this was the case, the English and Welsh experience shows that overall drug overdose deaths can be reduced by making heroin less available, while the Scottish variant shows that deaths may actually rise if other overdose-generating drugs take heroin’s place [▶ charts above](#). The mechanism linking the heroin drought and its reversal to drug poisoning deaths has been debated, but it [is thought](#) that the availability and price of heroin affected whether drug users consumed it and how often, and the amount they consumed [▶▶▶ more ...`](#)

In [England and Wales](#) in 2011 the heroin shortage coincided with fewer deaths involving heroin (down from 791 to 596) when drug users apparently turned instead to methadone, deaths involving which rose from 355 to 486 [▶ charts above](#). But by 2012 the usual order had reasserted itself, methadone-related deaths falling to 414 and in 2013 remaining at about the same level, while heroin deaths rose to 765. If the heroin shortage tipped the balance from heroin to methadone deaths, its reversal may have tipped the balance back the other way.

As for England and Wales, for [Scotland](#) too the heroin shortage seemed an explanation for [trends in 2011](#), when from over 320 in 2008 and 2009 heroin/morphine deaths had fallen by over a third to 206, while methadone-related deaths increased by 58% to 275, provoking a flurry of media concern over safety procedures and reliance on the drug for the treatment of heroin addiction [▶ charts above](#). Though methadone got the bad press, benzodiazepine-related deaths also increased at the same time, later to fall back as heroin-related deaths steeply increased. Relatively safe on their own, taken with opiates benzodiazepines can tip the balance towards a fatal overdose. Overall, in Scotland overdose death trends from 2010 are consistent with the heroin shortage resulting in greater resort to methadone and benzodiazepines, driving a short-lived increase in overall deaths, while heroin resumed as the driver in 2014 and 2015.

For Britain’s Advisory Council on the Misuse of Drugs, the heroin drought experience [confirmed](#) that global influences on the availability and price of heroin affect heroin-related (and consequently opioid-related) deaths. But the Council cautioned that intentionally replicating the conditions which led to the heroin shortage seems beyond the scope of national drug policies, having had more to do with trends in global heroin supply than law enforcement successes in consumer countries. Ramping up drug law enforcement efforts could, implied the Council, simply help fill courts and prisons without reducing availability and deaths – and even if heroin availability was reduced,



the impact on overdose deaths may be weakened if users move to other potentially harmful substances – just what seems to have happened in Scotland ▶ [above](#).

There were, however, dissenting voices, most notably from Release, the national drug law charity whose helpline provides an ear close to the ground of drug use trends. [Contesting](#) the supposed role of the heroin ‘drought’ and of its easing, Release pointed out that the dip in deaths in England and Wales attributed to the drought was seen only among men, not women – a puzzle, since the drought affected both. The latest [official report](#) on drug misuse deaths in England and Wales acknowledged the conundrum, but explained that differences in the drugs involved means female deaths are less likely to be affected by changes in the heroin market. The explanation was consistent with an [analysis](#) of reports from coroners on drug misuse deaths in England in 2013. It reported that at 50% of cases, among men heroin/morphine topped the list of implicated substances, while among women it was other opiate-type drugs – 42% of cases compared to just 36% involving heroin/morphine.

How a shortage of heroin reduced deaths involving the drug and why the subsequent rebound has also been debated. Amongst other factors, one possible mechanism for both advanced (1 2) by the Office for National Statistics was fluctuations in the purity of heroin. During the drought heroin became more diluted, but in 2013 when it ended the strength of heroin bounced back somewhat, supposedly catching out users whose tolerance to the drug had faded due to lower purity and reduced use. From today’s perspective, the credibility of this explanation is weakened by the fact that heroin deaths continued to steeply increase in 2014 and 2015. At the time Release [had queried](#) the supposed role of purity, arguing that “there just is not enough of a consistent relationship between purity and overdose in fatal toxicological reports. Deaths occur most commonly in people in their 30s, who are dependent, tolerant, long-term injecting users, and so purity variations would not greatly impact this group of people.” The Advisory Council on the Misuse of Drugs [was also sceptical](#), arguing instead that the post-drought upswing in deaths was “not necessarily produced by increased dangers of using higher purity heroin. Rather, it seems that the availability and price of heroin affects whether users take it, the amount they take, how often they take it and therefore impacts on the rate of heroin-related death.”

### Is poverty an underlying risk factor?

Deprivation and being at the wrong end of socioeconomic inequality are associated with multiple, overlapping lifestyle-related and other risk factors leading to premature death, including excessive drinking, smoking, poor diet and low levels of physical activity. This constellation is [thought](#) to be the reason why alcohol-related mortality and ill-health are greater among poorer than more well-off drinkers, even though on average poorer people drink less. Conceivably, similar influences partly account for the concentration of drug-related deaths in poorer communities and among more disadvantaged drugtakers. This mechanism may be visible in the overlapping comorbidities [noted](#) among drug-related fatalities in Scotland ▶ [above](#). Whatever the causal chains, in the UK the association between drug-related mortality and deprivation is well established (1 2 3 4 5) ▶▶▶ [more ...](#)

[Reacting](#) to the upsurge in heroin and opioid-related deaths in Scotland in 2015, the head of the Scottish Drugs Forum said, “The deaths are heavily concentrated in our poorest communities and if you look behind the lives of most people who have died you will find a life of disadvantage often starting with a troubled early life.” In the previous year over half the people who died a drug-related death in Scotland [had lived](#) in the fifth most deprived neighbourhoods – 296 deaths in 2014 compared to just 17 in the fifth least deprived areas, a pattern essentially unchanged since at least 2009. Framing the socioeconomic gradient in the death rate as a form of health inequality, the analysts [commented](#), “These figures reflect the widely recognised and documented associations between deprivation and health inequalities.”

In England data [presented](#) to an expert group convened by Public Health England in 2015/16 gave the same message – evidence of “a strong correlation between [drug-related deaths] and deprivation and low income employment”, leading to the conclusion that “There appears to be a correlation between economic and health inequalities, deprivation and drug-related deaths.”

In Northern Ireland the health inequality gap in deaths as a result of drug misuse between the 20% most deprived areas and the 20% least deprived [widened](#) between 2008 and 2014 even as they narrowed for alcohol-related mortality. By 2010–2014 the drug misuse death rate was 8.3 per 100,000 of the population in the most deprived areas compared to just 1.9 in the least deprived.

The role of deprivation was considered in detail by the Advisory Council on the Misuse of Drugs in their [report](#) on opioid-related deaths. Presumably looking at England and Wales, they noted that drug misuse death rates per million of the population are

substantially higher in the most deprived areas, which up to 2014 had also seen the greatest recent increases. It was, thought the Council, partly because problematic heroin use is itself most common in more deprived areas, [graphically indicated](#) for England by linking local authority area deprivation scores with the estimated number of problem drug users in each area, a link also apparent [in Scotland](#). Aggravating the situation is that poverty and the loss of services and welfare benefits have hit these areas hardest, generating a generally more risky environment and extending the health differential between richer and poorer areas. In the Council's words, "Increasing the socio-economic deprivation of vulnerable people and of the areas that they live in, while reducing public services in these areas, would be expected to increase their social isolation, their experience of poverty and so their risks of [drug-related death]."

Confirming that drug misuse deaths are disproportionately the province of the poor and isolated, in England in 2013 reports from coroners to a national surveillance programme [identified](#) half the deceased as unemployed and half as living alone or with no settled home. Public Health England's expert group [noted](#) that drug-related deaths were disproportionately seen among divorced people and single men, again identifying social isolation as among the factors aggravating risk.

European experts [have also pointed](#) to US studies linking greater socioeconomic inequality at a state or neighbourhood level either with more overdose deaths or a generally higher mortality rate among drug users, an association probably partly due to higher levels of dangerous forms of drug misuse in the poorer areas, but perhaps also, the experts thought, to more extreme stigmatisation and marginalisation.

### Treatment protects; leaving is risky

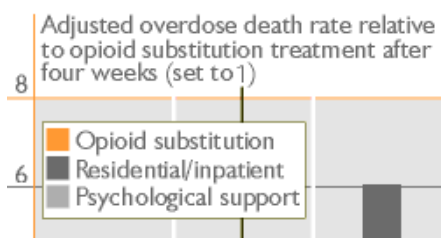
Internationally [the evidence is strong](#) that being in treatment – and especially for opiate users, being in a substitute prescribing programme – helps prevent overdose deaths. This effect has also recently been explored in relation to drug poisoning deaths in the UK ([1](#) [2](#) [3](#) [4](#)), providing further evidence of the protective effect of being in treatment and the heightened risk of overdose death while not in treatment and after leaving. It means that apart from specific harm reduction initiatives, lives should be saved by simply extending the reach and duration of treatments associated with a reduced death rate [▶▶▶ more ...](#)

Evidence consistent with a protective effect of treatment service contact emerged among the overdose incidents analysed in depth in [Wales](#) in 2014/15. Of the overdosers who died, 40% had been in contact with substance misuse services in the past six months compared to 66% of those who survived, most of whom had been in contact very recently. For the analysts it pointed to the life-preserving effect of "regular contact with support services [leading to] greater exposure to harm reduction advice and information, including access to fatal drug poisoning preventative measures such as Take Home Naloxone provision."

The same issue has been explored in detail in England ([1](#) [2](#)). Between 2008 and 2012 around a fifth of opioid-related deaths had involved patients in treatment, but especially in proportion to the numbers of opioid users in versus out of treatment, they were dwarfed by the far greater number of deaths among people not in treatment. In 2012, 57% of opioid-related deaths involved the minority of drug users not in treatment since at least 2006. The maths indicated that a drug user was less likely to die if they were or had recently been in treatment. Between 2008 and 2013, this presumed protective effect had remained stable.

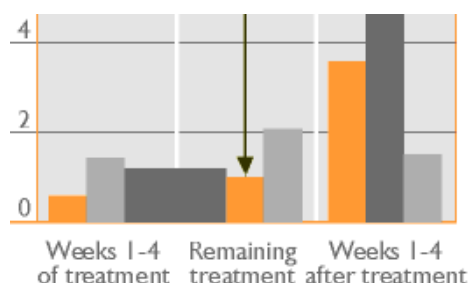
Again in England, a [study](#) was able to make a more sophisticated assessment of the potential impact of treatment over the four years from April 2005 and March 2009, allowing up to near the end of 2011 for deaths to be registered. The subjects were patients recorded as having received treatment for dependence on opiate-type drugs during these years. Though unable to assess the risk of never having been in treatment during this period, the study could assess the relative risks of starting, remaining in, and leaving or having left treatment. To help level the playing field, the chances that patients would die were adjusted for sex and age, whether they were recorded as injecting or also problematically using alcohol, benzodiazepines, crack cocaine, or cocaine powder/amphetamines, and whether they had been referred to treatment by the criminal justice system.

While in treatment the drug poisoning death rate averaged the equivalent of 2.9 per 1000 people over a year, after having left treatment, 4.5. Adjusted for other factors, there were 1.73 poisoning deaths out of treatment for every 1 while in treatment, a statistically significant difference highly unlikely to have occurred by chance. On the



debit side, the study also confirmed the high risk of leaving treatment, especially residential settings which generate abstinence partly by divorcing the user from their normal environment [▶ chart right](#).

During the four weeks after leaving treatment and before (if at all) restarting treatment the 2.9 in-treatment poisoning death rate per 1000 people over a year increased to roughly 8. At 4.2, risk greatly



reduced but remained elevated beyond the first four weeks after leaving and before (if at all) restarting treatment. Relative to other treatment-exit scenarios, there was no significant difference in the risk of death after leaving treatment having 'successfully completed', when the death rate was 3.9, significantly greater than during treatment; leaving treatment was about equally risky whether or not that treatment had been deemed 'successful'. Of the treatment modalities included in the study, only non-residential psychological support – counselling and allied approaches – was not followed by a spike in deaths in the four weeks after leaving, seemingly because being in this treatment was not associated with a reduction in the death rate – there was, the implication is, no overdose-suppressant effect to bounce back from.

Just how many opioid-related drug poisoning deaths are saved by treatment [has been estimated](#) for England for the years 2008 to 2010. Relevant deaths during each of the three years were matched to the treatment database to establish whether the deceased had been in treatment during that year, and if they had, whether their death was during or after treatment. Coupling this data with estimates of the total number of opioid users in England also enabled the analysts to estimate how many were not in treatment at all during each year. It was then possible to identify the number of opioid-related deaths during periods when opioid users were out of treatment, either because not in treatment at all during the year, or before they started. For each year and each age group, these figures were converted to the equivalent of deaths per 100 opioid users per year. Next step was to extrapolate this pre/no-treatment death rate to a 'worst case scenario' in which it was assumed that no opioid user in England had been in treatment in each of the three years. If the actual number of deaths was lower, it would indicate that being in treatment during the year had prevented deaths. Findings were that the pre/no-treatment death rate was 7.7 per 1000 users per year, but just 2.0 while opioid users were in treatment, and 4.1 among former patients during periods when they had left treatment. The figures equated to treatment preventing 880 opioid-related deaths in England in each of the three years.

One key assumption made to reach these figures was that in the absence of treatment, opioid users never in treatment during a year, those who entered treatment and stayed in it, and those who entered but left, would have died at the same rate. This entails the assumption that except for age, in every respect other than their treatment access these three groups were at the same risk of an opioid-related death. If this assumption was incorrect, and what led someone to stay out of or leave treatment would have increased their risk *even if they had been in treatment*, the consequence would have been to overestimate treatment's potential protective effect. The same caveat applies to analyses of routinely collected statistics which indicate deaths are less likely while a drug user is in treatment, and to a lesser degree to the [study in England \(▶ above\)](#) which adjusted for some factors related to mortality risk, but could not be sure of having fully levelled the playing field. However, evidence from [studies abroad](#) have confirmed the lifesaving impact of substitute prescribing in particular. Some of the most clear-cut data comes from Scandinavia, where resistance to prescribing opiate-type drugs to heroin addicts has created quasi-randomised, real-world comparisons which permit the value of these approaches to be more convincingly demonstrated than in the UK, where the widespread availability of substitute prescribing treatments makes a quasi-randomised comparison impossible.

If not being in treatment increases risk of fatal overdose, it raises the possibility that rising deaths were partly due to more problem drug users staying out of treatment. At least up to 2011/12 in England, there is little evidence this happened. The reduction in opioid (and/or crack) users in treatment in England from the mid-2000s, and the drop among the under-25s in particular, do not seem to have been due to a growing failure to engage them in treatment, but to falling numbers in the general population. Over this period the proportion of the nation's under-25 opioid users who engaged in treatment remained roughly stable, while treatment actually engaged a greater proportion of opioid users aged 35 or more (for data [unfold 👁 supplementary text](#)). However, since then there have been another five or six years for potentially deterrent treatment policy changes to affect intake and retention.

[Supplementary text. Click to close 👁](#)

Under-25-year-old adult primary opioid or crack users [in treatment](#) in 2005/06 numbered 24,127, while in 2004/05 the estimated number in the [general population](#) was 72,838. Assuming this figure remained the same in 2005/06, it meant that 33% of under-25 opiate and/or crack users were in treatment that year. For 2011/12 the corresponding figures were 9,985 [in treatment](#) and in the [general population](#) 32,628, equating to 31% of under-25s in treatment.

From the same sources and for the same years, the corresponding figures for problem users aged 35 or over were in 2005/06 about [47%](#) in treatment and in 2011/12 [60%](#). The age ranges and dates of all these figures do not completely correspond, but the general impression is of at most only a slightly diminished capture rate of under-25 opiate and/or crack users into treatment in England and extended capture of older users.

 [Close supplementary text](#)

## Treatment's shield is uneven and imperfect

Perhaps even more worrying than treatment's failure to reach people who died, are those drug-related deaths which happened despite current or recent treatment contact – over half the deceased [in Scotland](#) in 2014. A protective effect is best established and at its peak in substitute prescribing programmes, while in England, it [was not apparent](#) at all for standalone psychological treatments. If being in treatment does shield patients from drug-related death, in the immediate period after the shield is removed, rates increase. In some cases this will be because the reasons for dropping out/being forced out of treatment, such as return to dependent illegal drug use, are also risk factors for overdose. However, in England 'successful' planned treatment exit is no less likely to result in death ([▶ above](#)) than unsuccessful or unplanned exit, suggesting that even after these apparent successes, relapse is common, perhaps because inadequate attention has been paid to preparing patients for discharge and monitoring and supporting them after they leave [▶▶▶ more ...](#)

[Commenting](#) on the upsurge in heroin and opioid-related deaths in Scotland in 2015, the head of the Scottish Drugs Forum pointed the finger not just at the low proportion of drug users in treatment ("less than half ... at any point in time") but also at the quality of those services, especially methadone programmes which prescribe doses lower than recommended in practice guidelines: "A person-centred evidence-based approach to prescribing would be a significant contribution to reducing the range of circumstances that make deaths more likely ... We know that being in effective treatment protects people against dying of an overdose so we need to look at ways to increase the reach and retention rates of services."

An [analysis](#) of drug-related deaths in 2014 in Scotland reported that 53% of cases were known to have been in contact with services providing treatment for drug problems in the six months before they died, and 40% were actually in treatment when they died. Both proportions had been trending upwards since 2009. The great majority of recent contacts were with specialist addiction services and/or with GPs. At the time of death, 29% of the deceased were being prescribed an opioid drug, mainly methadone. For the analysts there seemed some clear messages not just about the need for more treatment, but about the need for more effective treatment: "The evidence on increased overdose risk after release from custody or following treatment already suggests it is vitally important that services (both drug-related and non drug-related) work together to promote retention in treatment, continuity of care and awareness of overdose risk." Similar figures the year before had prompted Scotland's [National Forum on Drug Related Deaths](#) to [highlight](#) the "considerable potential to reduce the number of drug-related deaths by undertaking targeted harm reduction measures".

In [England](#) around a fifth of opioid-related deaths from 2008 to 2012 involved patients actually in treatment. The figures rose slightly from 18% in 2008 to 22% in 2012, but in comparison with deaths outside treatment, were still evidence of a protective effect of treatment. Nevertheless, in 2013 [around 350](#) patients died an opioid-related death while in treatment, and nearly 400 died either in treatment or within six months of having supposedly successfully completed treatment.

## Impact on drug-related deaths differs with the treatment

While treatment is generally associated with reduced mortality, in this respect, not all treatments are equal. The [study](#) referred to [above](#) which found what looked like a significant protective effect of treatment in England, also conveyed the more specific message that opiate-dependent patients should be engaged and retained in substitute prescribing programmes until there is little risk of their relapsing after leaving. The findings [led commentators](#) to recognise substitute prescribing as the "gold standard treatment" for opioid addiction, one which informed prospective patients may choose to reject, but which should never be denied them due to lack of access [▶ chart ▶▶▶ more](#)

...

The study found that compared to not being in treatment at all, after adjusting for other factors patients were nearly half as likely to die (the ratio was 1:1.92) while being prescribed substitute opioids. Risk-reduction while in residential/inpatient care was slightly less apparent (1:1.5), and there was no diminution in risk while in standalone psychological treatments, where at 5.3 per 1000 people over a year, the overdose death rate was just over twice that in substitute prescribing. Worst of all was the rate in the four weeks after leaving residential/inpatient care – nearly 19 overdose deaths per 1000 people over a year was the best estimate, though it might have been anywhere from 10 to 35.

It was also possible to calculate the relative risk of death from each type of treatment while in it plus the four weeks after leaving and before starting any other treatment. Assuming that rapid post-treatment overdose indicates a deficiency of the treatment – patients must have quickly relapsed for this to have happened – this calculation is as close as the reported data can come to reflecting the overall difference in risks between the different types of treatment. At 2.78 per 1000 people over a year, for opiate substitute prescribing the figure approached half that of the other modalities.

Another example comes from Australia, where it [was estimated](#) that among 1,097 opiate users starting treatment with oral naltrexone between 1998 and 2000, there would have been 25–29 fewer deaths had they instead been prescribed methadone. Naltrexone blocks the effects of opiate-type drugs, but retention in these programmes is poor. When patients stop taking the medication, many relapse to heroin use having lost their protective tolerance to the drug. Extremely high overdose rates [have been the result](#). For similar reasons, detoxification and residential rehabilitation [have also been associated](#) with high post-leaving death rates, perhaps indicative in these cases of inadequate arrangements to prevent or prepare for relapse after leaving.

### **Curtailing maintenance prescribing will lead to more deaths**

If in life-preserving terms, substitute prescribing really is the [“gold standard treatment”](#) for opioid addiction, it follows that even if other modalities take its place, curtailing methadone maintenance and allied treatment will cost lives. Curtailing maintenance is exactly what the UK government has been attempting to do, an effort for which some success has been claimed.

During 2008 to 2010 national policy in England and Scotland turned away from the attempt to reduce harm from continuing drug use and towards abstinence-based recovery from addiction, favouring drug-free approaches like residential rehabilitation and [persistently seeking](#) to limit the scope and duration of maintenance prescribing. From this perspective, being maintained on methadone or buprenorphine is simply another addiction to be avoided or ended as soon as possible. The policy's administrative embodiment in England was a performance indicator which linked funding for treatment services to the proportion of patients who leave treatment free of dependence and do not return within six months – [an incentive](#) to get patients out of treatment sooner rather than later. In contrast, recent studies in the UK have emphasised that the lifesaving benefits of maintenance prescribing are maximised by long-term retention ([1 2 3](#)). In line with the evidence, expert advisers for the [UK](#) as a whole and for [Scotland](#) have stressed the need to extend and expand maintenance prescribing in order to curb the rise in drug-related deaths [▶▶▶ more ...](#)

A [study](#) of patients attending over 460 UK general practices who had been prescribed methadone or buprenorphine between 1990 and 2005 was able to attach some numbers to the risk of limiting the duration of maintenance prescribing. It found that being in these treatments was associated with a halving in the risk of death due to any cause, but also that the strength of the link varied in different phases of treatment. The short but risky induction and treatment-exit periods were counter-balanced by the relatively safe period in between, when patients and dose have presumably been maximally stabilised. The longer this period of relative stability, the greater the net reduction in the death rate. The implications were that extended treatment is required to realise substitute prescribing's life-saving potential. Fed into a [simulation model](#) for the UK, the data suggested that shortening an average nine-month treatment episode to six months would result in 10% more deaths, while extending it to 12 months would lead to a 5% decrease. The paper which made this estimate was titled, “Promoting recovery and preventing drug-related mortality: competing risks?” Its message was clear: curtailing maintenance in the name of recovery and becoming drug-free (including free of prescribed substitutes) would lead to more deaths.

Among specialist treatment services in England there [was no elevated risk](#) of death during induction into substitute-prescribing programmes, but as with the GP-based programmes ([▶ above](#)), risk increased on leaving, when the drug-related death rate equated to the same period and same number of patients was 3.6 times higher than

during treatment ► [chart above](#). Given that being in treatment was associated with a reduction in mortality, the findings again placed the emphasis on retention rather than treatment exit.

When the UK's official drug policy advisers looked at this issue they [found](#) "strong evidence that time limiting [opioid substitution therapy] would increase the rate of overdose deaths," and that rather than staying too long in methadone-based treatment, generally Britain's heroin-addicted patients left too soon to fully benefit.

In Scotland too, an expert group monitoring drug-related deaths [saw](#) expanding rather than restricting maintenance as a key to curbing the increase in deaths. The experts were concerned that despite there being no evidence that problem drug use had receded, in 2013/14 for the third successive year dispensing records indicated reduced access to methadone and other substitute prescribing treatments: "for those who need [opioid replacement therapy], access should not be limited, but rather enhanced. It is also crucial that we explore further why people drop out of [opioid replacement therapy], particularly where their discharge is unplanned." From this point of view there was, however, worse to come, as over the next two years the waning of maintenance treatment [continued](#) ► [below](#). The same body [had previously](#) called for front-line generic medical services to play a greater role in identifying and reducing risks for out-of-treatment drug users, and for investment to get more drug users into specialist treatment and improve treatment quality and variety.

### Concern that government recovery agenda risks adding to the deaths

Rhetoric and performance indicators antithetical to long-term treatment seem as yet only partially to have affected practice, and even if they have, it may be many years before the impact on deaths can be established. Establishing this would require studies not yet done. Meantime, the fear is that at the least such policies do not help counter the age-related increase in opioid overdose deaths, and at worst, that they risk contributing to it by prioritising treatment exit, deterring entry into substitute prescribing programmes, and tipping the balance of treatment away from these programmes and towards detoxification and drug-free rehabilitation and support.

One reason for these concerns is the relative efficacy of maintenance prescribing in preventing deaths compared to other treatment modalities ► [above](#). Another is that the offer of legal access to opiate-type drugs [attracts](#) opiate-dependent patients into the treatment system, rapidly reducing heroin injecting and illegal opiate use and affording improved access to harm-reduction advice and medical care. Among the concerned voices, hardest to dismiss are those of the UK government's own drug policy advisers, who [warned](#) that "encouraging people to leave treatment may increase their risk of dying if they are not able to sustain abstinence". If this is the case, it would cast a worrying shadow over the claim celebrated in the Conservative Party's [2015 election manifesto](#) to have "reformed drug treatment so that abstinence and full recovery is the goal, instead of the routine maintenance of people's addictions with substitute drugs." Perhaps an expression of this policy, in both Scotland and England, prescriptions for opiate substitute drugs and especially methadone have been steadily falling since 2010, the year the UK government published its [recovery-oriented](#) national drug strategy, falls not entirely accounted for by a reduced opiate use problem or opiate treatment caseload ►►► [more ...](#)

With much of the data above before them, the expert group convened by Public Health England who [highlighted](#) the ageing phenomenon (► [above](#)) also noted that "A majority of these [older] users appear not to be engaging in drug treatment where they could be protected", and that most "opiate misuse deaths in the past five years occurred in those ... not recently ... in community drug treatment". The conjunction of these facts implied that the rise in deaths could have been counteracted by what for these long-term heroin users was a more attractive and retentive treatment system. However, the group exonerated the national focus on 'recovery' as a cause of this shortfall in treatment's grip on the opioid-using population: "Matching death and treatment data had not produced any evidence that a focus on recovery and on successful treatment completion has had a negative impact and led to more drug deaths."

As well as the overall stability of the presumed protective effect of treatment, backing this conclusion was the [only very slight change](#) in the small proportion (3–4%) of opioid-related deaths accounted for by patients who had in the past year left treatment after successfully completing the programme – the outcome prioritised by the government's recovery agenda. The closest the group came to querying this agenda was to recommend "keeping people in treatment for as long as they benefit". This unarguable statement begs the question of what 'benefit' consists of. Simply not dying may be considered insufficient by some if the patient is making no further progress in their recovery and reintegration – the 'parked on methadone' jibe [levelled](#) at

maintenance programmes.

### Maintain maintenance prescribing, say official drug policy advisers

Though like Public Health England they spotlighted ageing (▶ [above](#)) as the main cause of rising opioid overdose deaths, government's drug policy advisers were not resigned to the rise continuing, and less inclined to totally exonerate the recovery agenda. The [report](#) on opioid-related deaths from the Advisory Council on the Misuse of Drugs was accompanied by a letter to Home Secretary Amber Rudd which she may not have welcomed.

Her inheritance from her political party and her government has been the denigration of substitute prescribing in the name of recovery (1 2), but she was told that the Council "welcomes the considerable expansion in the use of OST (opioid substitute treatment) in the UK since the mid-1990s ... being in OST protects heroin users from overdose, and increasing coverage of OST has had a substantial effect in limiting the increase in drug-related deaths that would otherwise have occurred. The most important recommendation in this report is that government ensures that investment in OST of optimal dosage and duration is, at least, maintained." Part of the Council's evidence was that overwhelmingly opioid-related deaths in England occur among people not in treatment, leading them to stress the importance of knowing "whether treatment services and commissioners are doing as much as they could do to attract and retain vulnerable people." Relative to other treatment modalities, 'attraction' and 'retention' are among the distinguishing features of substitute prescribing programmes.

Expressed without fanfare, the evidence prompted the Council to make a potentially controversial statement in the body of the report: "encouraging people to leave treatment may increase their risk of dying if they are not able to sustain abstinence" – controversial, because in the previous paragraph they had in effect said that encouraging people to leave treatment was just what the UK government led by the Home Secretary's party had recently been doing, both in its policy rhetoric and in [the way](#) local areas are held to account. The implication was that in so far as it has been implemented, UK government policy risked adding to opioid-related deaths. It was a small step short of saying government was knowingly risking deaths which a greater commitment to long-term opiate-substitute prescribing would have prevented.

As well as premature treatment exit, the Council pointed out another way an unbalanced commitment to abstinence-based recovery might cause deaths – by deterring treatment entry. They warned that prospective substitute prescribing patients who have got the message that treatments would be constrained and short-lived might be less keen to start the process. Much earlier in its history, the Council had given a similar warning when in the 1970s addiction treatment clinics in Britain tired of long-term prescribing and started to aim for relatively rapid abstinence-based 'cures'. A striking parallel to today's debates, in its 1982 *Treatment and Rehabilitation* report the Council noted "increasing uncertainty as to the wisdom" of indefinite prescribing, "so that greater emphasis is now being placed on the ultimate objective of a drug-free existence. But the consequence of this trend is that it creates an increasing proportion of drug misusers who are deterred from seeking help from the specialised services ... Our enquiries indicate that a policy of not prescribing drugs has deterred opioid misusers from seeking treatment ... On the other hand, continued maintenance prescribing has not prevented a substantial growth in drug misuse and may be a factor in blocking the ready access of new patients to the clinics."

At the front line there is concern that the focus in national policy on treatment exit and abstinence is not helping bring down the death rate. Alex Boyt, a drug service user coordinator in London, is closer to the ground than many commentators and researchers. Prompted by a [steep rise](#) in drug-related deaths in England, in 2014 he [asked](#), "Is the recovery agenda killing people?" His answer was, "You have to think in places it probably is." Reasons were that "People who used to be held by the treatment system are now confronted by goals for integrating into society the moment they make it through the door ... usually with an implied or overt requirement that prescribing is dependent on engaging. When successful completions (often code for getting off your script) became the focus, one of our local service managers said 'we have to get them in and out before we get to know them'."

A broader policy critique from a team fronted by the president of the Faculty of Public Health (many of whose members are now responsible for addiction treatment in England) put part of the blame for the upsurge in opioid-related deaths on an English national drug strategy which in 2010 swung away from harm reduction "to place abstinence at the heart of all treatment". At the same time the [Public Health Outcomes Framework](#) focused minds on discharging patients from treatment rather than keeping them in, despite evidence that being in treatment helped prevent premature deaths. Among patients being treated for opiate use problems, at first the refocusing seemed

successful, with a rising proportion of treatment leavers recorded as completing treatment free of dependence. But from its peak of 37% in 2011/12, the proportion fell steadily to 28% in 2015/16, while the proportion recorded as having dropped out rose from 22% to 35%. Reduction in successful treatment exits was attributed by Public Health England to a progressively more entrenched caseload of opiate users with long-standing and complex problems. But for the critics, together with more drop-outs and dwindling overall numbers, it was a sign that a re-orientation to abstinence and changes in commissioning and clinical governance structures had weakened the treatment system and its ability to preserve the lives of people dependent on heroin.

### Evidence of a turn away from maintenance prescribing

Post-2010 reductions in substitute prescribing in England and Scotland may be a sign of a national turning away from maintenance in the name of recovery. In Scotland, where there is no evidence of a receding opiate use problem, between 2010/11 and 2015/16 the number of prescription items for medications prescribed as opiate substitutes decreased by 9% from 574,420 to 522,956 and the number of standard daily doses decreased by 16% from 26.3 million to 22.0 million. For methadone in particular, the falls were steeper, standard daily doses down by a fifth. Estimates of the number of patients prescribed methadone had also declined, though these numbers were unreliable and the fall was slight. This pattern tentatively suggests a reduction in average dose and/or duration of methadone prescribing.

After publication of Scotland's recovery-oriented drug strategy in May 2008 the number of patients whose main drug problem was heroin who started treatment fell from 6,777 in 2007/08 to 3955 in 2014/15, a 42% reduction. Adding in other recorded opiate-type drugs yields a fall from 7,191 to 4,807, reducing the drop in treatment starts to 33%. This was not it seems mainly because opiate use problems had become less common. During this period up to the latest year (2012/13) for which we have figures, Scotland's opiate/benzodiazepine drug problem was increasing while the number of younger users was falling, but only modestly ▶ chart. Why in the aftermath of the national strategy these users of heroin and other opioids turned away from starting treatment is unknown, but at the least, it seems that the change of tack in national policy did not act as an encouragement to enter treatment.

In England too, since 2010 the number of methadone prescriptions has consistently fallen and buprenorphine prescriptions too have reduced, though in England part of the explanation is reducing numbers of dependent opiate users in the general population and in the treatment caseload. But it is just part: opiate users in treatment fell by 11.4% from 2010/11 to 2015/16 while numbers of methadone prescription items dispensed fell by about 21%. In England we have estimates of the opiate using population only up to 2011/12 ▶ chart above, but the stability in the estimates since at least 2008/09 would mean only an atypically steep fall could match the reduction in methadone prescriptions. The chances are that instead each opiate user has become somewhat less likely to be maintained on methadone.

What Public Health England has described (1 2) as an opiate treatment caseload increasingly entrenched in their addictions might be expected to have become correspondingly less likely to leave treatment, but since at least 2009/10 the trend has been slightly in the other direction. Death as a reason for leaving treatment increased from 1040 in 2009/10 to 1693 in 2015/16. Subtracting these, the proportion of opiate patients who left during each year rose slightly from 22.7% to 24.2%. What should all else being equal have become a more retaining treatment system has moved slightly the other way.

England's reducing opiate use treatment population partly or wholly mirrors its waning national opiate use problem, but at the least, this was not taken as an opportunity to increase the proportion of problem drug users in treatment and the time they are protected in treatment, or it seems to increase the coverage and duration of opiate substitute prescribing by maintaining the overall level of prescribing. In neither England nor Scotland is there any evidence of an upgrading of the treatment offer to counter the presumed more entrenched addiction of the ageing population of opiate users – and at the same time, to counter their increased vulnerability to fatal overdose.

### Is methadone part of the solution – or part of the problem?

Across the UK there has been concern that methadone – prescribed partly in order to save lives at risk from untreated heroin addiction – is itself implicated in many deaths, and that despite recent downturns, over the longer term these have markedly increased. But methadone and allied maintenance medications save lives as well. The balance between these opposing pressures will depend on how the treatments are implemented, but the evidence presented ▶ above and in this section shows that in the UK and internationally, the balance has been strongly in favour of the medications ▶▶▶



**more ...**

Concern has most trenchantly been expressed in Scotland, where in 2015 methadone potentially contributed to 251 deaths, 36% of the total – somewhat more than in the previous three years, but not as many as the peak of 275 in 2011 ► [chart](#) above.

A [detailed report](#) on deaths in 2014 in Scotland found 115 methadone-related deaths where the deceased was being prescribed the drug at the time; in half the cases, the dose was in the recommended 60mg or more a day range. For these patients, their prescribed medication may actually have helped kill them. This does not, however, mean their deaths would have been prevented if methadone were not prescribed in Scotland or prescribed less frequently. Without a methadone prescription, these same drug users may have died from a mixture of drugs not including methadone, and other drug users would have died because methadone treatment was denied them. That was the message the analysts took from the figures, noting that “only 29% of those who died had been prescribed [opioid replacement therapy] at the point of death,” and that “there may still be problems with engagement of and retention in treatment for those at very high risk”.

Another 82 methadone-related deaths in Scotland in 2014 [involved](#) people not prescribed the drug, implying that supervised consumption regimens have not been able entirely to prevent methadone being diverted to the illicit market. It did, however, seem to be a diminishing problem. From a peak of 44% in 2011, among those who died while not being prescribed methadone or an allied drug, in 2014 just 22% had methadone in their bodies.

In England in 2013, 1,344 drug misuse deaths (compared to 1,812 registered that year) had been reported by coroners to a national surveillance programme. With this enriched data source, the [programme found](#) that just under a third of the 265 deaths in which methadone was implicated were known to have involved patients being prescribed the drug, meaning that over two-thirds involved people who had obtained methadone illegally.

Though leakage still happens, in both England and Scotland the advent of supervised consumption [has made](#) methadone services much safer by preventing the drug being diverted to the illicit market. The death rate per million doses plummeted during the period when supervision became the norm, leading to [an estimate](#) that if deaths due solely to methadone had continued at the same rate as before supervised consumption became established, in England and Scotland there would have been at least another 2,600 of these deaths between 2001 and 2008. Reaching that estimate entailed the optimistic assumption that people saved by supervised consumption from a methadone poisoning death would not have fatally overdosed on some other drug.

Substitute prescribing exerts a downward pressure on deaths due to attracting and retaining heroin users in treatment and reducing injecting and heroin use, but an upward pressure due to the medications adding to the availability of overdose-generating drugs. The nature of the treatment on offer will affect the balance between these forces. Expansion and de-restriction of methadone and buprenorphine prescribing in Sweden in the 2000s [seems to have led](#) to reductions in overall opiate-related mortality and hospitalisations, even though the subset of these deaths involving these medications increased. While much depends on how it is implemented, internationally and in Britain, being in opiate substitute treatment using methadone or buprenorphine [has been associated](#) with a substantially reduced risk of death. Despite its risks, the World Health Organization [was convinced enough](#) of methadone's public health credentials to place it on the international list of essential medicines.

Methadone's lifesaving credentials are well established, but buprenorphine – the main alternative heroin-substitute – should be safer still due a ceiling effect limiting its potential to cause respiratory failure, and possibly too because it is harder to divert to the illicit market and less attractive to illegal consumers. Possibly too, patients selected for or who choose buprenorphine are more treatment-oriented and more stable than those who go for methadone, and less likely to divert their medication to the illicit market. Whatever the reasons, when analysts related the number of deaths involving the drugs in England and Wales to amounts prescribed, [they found](#) that during the years 2007–2012 there were 0.137 methadone-related deaths per 1000 prescriptions of methadone, compared to just 0.022 for buprenorphine – more than a six-fold greater rate death for methadone versus buprenorphine.

Focusing on the risk specifically to the patients, the [UK study](#) which found a halving in the risk of death while in GP-based methadone or buprenorphine maintenance (► [above](#)) did not find any significant difference in the lifesaving impacts of the two medications. Such differences as there were tended to favour methadone. After adjusting for factors including sex, age, date, comorbidity, and dose, per day during treatment there were about 50% more any-cause deaths among patients prescribed buprenorphine versus methadone. At an average treatment episode duration of 245 versus 181 days, on

methadone the benefits of being in treatment also lasted longer. Similarly, an [Australian study](#) found the expected higher death rate on methadone during the first four weeks of treatment, but after that the death rates were about the same. The study was, however, able to adjust its results only for the age and sex of the patients.

Complicating assessments of the relative death rates involving methadone versus buprenorphine both UK-wide and in England is that in suspected drug-related deaths in [England](#), "methadone is routinely tested for, buprenorphine is not. Thus, few buprenorphine-related deaths per 1,000,000 recommended daily doses of buprenorphine may be due to absence of evidence, rather than evidence of a low fatality-rate."

### National naloxone programmes across the UK – but not in England

The subject of [another hot topic](#), here we only briefly acknowledge the importance of the advent of programmes training drug users and their associates to administer naloxone, a drug which rapidly reverses the effects of opiate-type drugs, including the respiratory depression which causes overdose. Naloxone [became the main new hope](#) for curbing the death rate after in 2005 UK law was amended to permit emergency administration by any member of the public. The drugs naloxone reverses are not the sole cause of overdose deaths – benzodiazepines and alcohol have a big role – but across the UK, 88% of drug poisoning deaths [in 2013](#) involved opiate-type drugs. Naloxone kits given medical approval and a relaxation of prescription-only requirements to permit drug services in England and Wales to supply them has aided distribution. Of all the UK nations, England has yet to take advantage of these developments to mount a coordinated national programme [▶▶▶ more ...](#)

England can, however, take credit for the first large-scale UK [follow-up study](#) of naloxone-based overdose prevention training. Helping legitimate investment in naloxone, it found such programmes can successfully be delivered to drug users in treatment, resulting in substantially improved knowledge and competence. Though only a few times, naloxone was used to save lives even within the study's three-month follow-up period. Its record in reducing opioid overdose deaths shortly after release from prison is [evidence](#) of the effectiveness of Scotland's naloxone programme. Especially since the upturns in during-year drug misuse deaths in 2014 and those registered in 2015, it is unclear whether Wales's national naloxone programme has helped reduce deaths. However, naloxone kits have been used many hundreds of times. Together with training thousands of drug users and their contacts in other lifesaving techniques, it seems inconceivable that lives have not been saved, even if this is difficult to prove to scientific standards.



One of the types of naloxone kits approved for use in the UK

### More information

The many contributors to overdoses and possible strategies to prevent them were reviewed by Findings in a [two-part series](#). Another hot topic has focused on [naloxone](#). Drug consumption rooms are another way to prevent overdose deaths, the evidence for which and UK policy were the subject of [another hot topic](#). A further hot topic [has discussed](#) the concept of harm reduction in general. Run this [hot topic search](#) for these and other reviews and studies on overdose prevention.

*Thanks for their comments on this entry to Sheila Bird of the University of Cambridge in England, and for comments on an earlier version to John Corkery of the University of Hertfordshire in England. Commentators bear no responsibility for the text including the interpretations and any remaining errors.*

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