Overdosing *on* opiates

Part I established that we know enough about the causes of opiate overdose to start preventing the deaths. How to save lives is the topic in part II.

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Background text

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Part I of this article (◤ issue 4) identified the things drug users and others do or don't do which affect the risk of overdose, and the influences which make these behaviours more or less likely. Key conclusion: overdose deaths are *avoidable*: rarely is taking heroin or taking a high dose the sole cause. Other factors turn potential risk into reality, and these factors are susceptible to intervention. Illegal heroin's uncertain strength and the fluctuating tolerance levels of its users mean that risk cannot be eliminated, but it can be drastically reduced. Ways this might be achieved are a mix of policies and tactics for which there is some evidence, and those which are untried but which knowledge of the causes of overdose suggest are worth attempting.

Prescribing policies

One way to reduce deaths is to ensure that the pharmaceuticals most easily available to supplement or replace heroin are also the ones least likely to cause overdose. Such measures may target opiate addicts or the population as a whole. The CURB campaign to restrict barbiturate prescribing in Britain in the late 1970s did both.

CURB aimed to make doctors and patients more aware of the risks of these drugs, then accounting for 2000 deaths a year.[124] Its impact is questionable – the much safer benzodiazepines were already displacing barbiturates;[139] the 'campaign' by drug companies to promote their new products may have more influential.[123] But CURB did draw particular attention to Tuinal, a barbiturate favoured by drug abusers. Between 1975 and 1978 Tuinal prescriptions halved, a steeper drop than in barbiturates overall.[124] It was during this period, and after tighter regulation of barbiturates in 1985, that the fall in addict overdoses became most apparent. Addicts continued to mix drugs, take alternatives when heroin was in short supply, and to deliberately overdose, but the drugs most easily to hand were far less dangerous.

Benzodiazepines are, of course, not risk-free. Considerable caution should be exercised before prescribing them for anxiety or sleeplessness in heroin users.

In the early '90s evidence of its abuse prompted a ban on buprenorphine prescribing in Glasgow.[24] Addict overdoses increased steeply as illicit heroin replaced the safer pharmaceutical. In hindsight, it was a mistake to withdraw buprenorphine without planning a seamless transition to another heroin substitute. Britain is currently in the midst of a 'campaign' to replace take-home methadone with supervised consumption to prevent diversion on to the illicit market.[20] In Glasgow this regime does seem to have cut deaths due to methadone, but not drug-related deaths as a whole ◤ *The Scottish experience* p. 17.

Some lives might be saved if addicts in need of antidepressants were prescribed drugs such as Prozac (known as SSRIs) rather than tricyclic antidepressants.[56]

Harm reduction policies

Repressive anti-drug policies can have opposing impacts. To the extent to which they hold down the level of heroin injecting, they will also hold down the overdose death rate. But they also make the drug use they fail to deter more dangerous, risking an overall increase in harm. Where repression is failing, less combatitive responses may create public health gains.

In the early '90s Hamburg and Frankfurt reversed the upward European trend in drug-related deaths.[11 140] This also was a period during which the cities softened the unyielding German approach, introducing harm reduction measures such as *de facto* decriminalisation of heroin possession, housing and reintegration services for addicts, more accessible treatment including substitute prescribing, needle exchanges, injecting rooms, and policing aimed at stabilising rather than disrupting local drug scenes. The new climate enabled police to form a relationship with local users and to direct them to helping services.[131]

The counter-productive potential of repressive policies was evident in Cabramatta in Sydney, a dealing venue whose addict customers had little access to methadone treatment and faced repeated police crackdowns. There is no evidence that the crackdowns dented heroin use levels, but they did create overdose risks linked to a steep rise in deaths ◤ *part I*, p. 17.

Golden Bullets

Essential practice points from this article

- Methadone maintenance effectively reduces the risk of overdose. Improving uptake and retention is an important way to reduce the death rate.
- Where a high proportion of heroin addicts are in touch with drug services, these might be able to make a significant contribution by providing information on the risks, encouraging users to protect themselves and others, and developing care plans based on an assessment of risk.
- Peer education and outlets such as needle exchanges could spread information about how to prevent overdose to users not in treatment.
- If they witness an overdose, heroin users should be encouraged to immediately summon emergency services in the knowledge that only in exceptional circumstances would police be called to the scene and/or make an arrest. Such reassurance is contingent on local protocols being worked out.
- The effectiveness of the help rendered by others could be greatly improved by training in overdose prevention including administration of the drug naloxone.

Extending methadone treatment

Methadone maintenance has a particularly well established ability to reduce heroin overdose deaths. It probably does so by stabilising lifestyle and by reducing injecting and the range of drugs used. Other interventions also achieve these outcomes, but fail to protect against overdose during relapse by maintaining tolerance levels. The implication is that yet more lives would be saved if maintenance were expanded.[28 36] Underlying this is the assumption that addicts attracted in to new provision will benefit as much as today's patients.[141] However, this cannot be taken for granted.[142]

Where (as at times in Sweden) barriers to maintenance are so arbitrary that those excluded differ little from current patients, lowering them will probably draw in similar patients who will benefit to the same degree. But where the barriers filter out less promising patients, lowering them could reduce the effectiveness of the programmes.

In Britain, increased capacity would probably draw in extra addicts who would benefit in much the same way as current patients. However, the potential for spreading the net too far is clear from the English NTORS study. Nearly a quarter of patients in methadone services did not respond well to treatment. A year later the only change in this minority was an *increase* in benzodiazepine use,[143] a risk factor for overdose. If methadone simply added to their drug menu, the overdose risk would be greater for these people than before treatment.

Expanded provision will save most lives if programmes provide adequate doses in an explicitly maintenance regime[78] attractive to patients, but also enforce controls which safeguard those not on the programme – a difficult balance.[20] Measures such as daily attendance for supervised consumption save the lives of some who would otherwise have taken diverted methadone, but if they deter treatment entry and elevate drop-out, more addicts will lose the protection afforded by treatment.[144 145 146 147] Deaths from diverted methadone may fall, but those from heroin may rise. There is evidence that this can happen,[148] notably from research in Italy into a new law banning methadone take-home doses: at one clinic drop-out increased in anticipation as did planned withdrawals, a high proportion of which (though numbers traced were small) ended in death within three years.[149] Confirmation in reverse comes from Hamburg, where relaxation of methadone take-home regulations led to more methadone deaths but fewer due to heroin.[90]

The balance between control and accessibility is particularly delicate in the first weeks of treatment, a high-risk time for overdose. UK guidelines reflect this dilemma, recommending initially low doses and supervised consumption, whilst emphasising that engaging drug misusers in treatment itself saves lives.[150]

Policies on ending treatment or reducing doses also entail opposing risks. Regimes which, from the patient's point of view, 'punish' continued use of illicit drugs could deter disclosure, creating a dangerous gap in the doctor's knowledge. Precipitous reactions to illicit drug use, and unnecessary or unrealistic rules which act as traps for addicts to fall in to, force many out of treatment and back at high risk of overdose. Yet patients who simply add methadone to their drug intake may be putting themselves at *greater* risk, and those who sell their methadone may be putting themselves *and* others at risk. If prescribers react to illicit drug use by prescribing more methadone without ensuring that the patient takes it, they may simply be supplying methadone for the illicit market.[90] Ideally, ways will be found to intervene with these patients without ending treatment.[79]

Buprenorphine is much safer than methadone and could prove attractive to long-term users[28] who are no longer seeking an opiate high and do not want to go daily to a clinic or a pharmacy to take methadone under supervision. At the other end of the scale, heroin prescribing could attract addicts not yet ready to 'settle' into a methadone-type regime. When heroin consumption has been supervised, the overdose death rate has proved unusually low.[151]

Created by Exchange Campaigns for the Department of Health, this new suite of overdose prevention materials includes a booklet for drug workers, posters, and pull-off cards to hand to drug users. On one side a reminder that not everyone survives overdose, on the reverse, how to improve their chances. Copies available soon from DrugScope, 020 7928 1211.
Due to printing limitations colours have been altered.

Injecting rooms

Another especially relevant harm reduction tactic is the provision of authorised injecting venues overseen by staff trained and resourced to save lives. About 50 centres in Germany, the Netherlands and Switzerland have not seen a single fatal overdose. In Frankfurt, overdoses requiring hospitalisation were ten times less common among injectors who visited injecting rooms than among street injectors.[140] Even when overdoses continue to occur, deaths are very few. Rather than making each injection inherently safer, the key feature may be oversight by staff with appropriate resuscitation training and equipment who can identify and respond to early signs of overdose.[152]

Such facilities have been seen as successes in their own cities, but it is difficult for evaluations to quantify their benefits.[9 28 152 153] Neither are the services' low-threshold entry systems and fleeting contacts with clients conducive to monitoring outcomes. What we do know suggests that the rooms are a valuable overdose reduction tool. They are also costly,[154] possibly vulnerable to legal challenge,[155 156] generate heated debate,[28] and require careful planning if they are not to aggravate local drug-related nuisance.[140] Their greatest relevance will probably be to combat the heightened overdose risk associated with major street dealing and drug use venues.[25 28] Here, costs are justified by the concentration of addicts and the prospect of a dramatic reduction in emergency admissions, while drug-related harm and nuisance may be prominent enough to gain local support and funding.

Opiate antagonists

Opiate antagonists block the action of opiates, including respiratory depression. Given quickly enough, long enough, and

in high enough doses, they prevent an opiate overdose becoming a fatality. Its rapid action has made injected naloxone the drug of choice.[45 157] It also has practically no effect on someone who is not dependent on or has not taken opiates, and does not itself depress respiration. This means that to a degree it can be deployed on 'better safe than sorry' basis where opiate overdose is suspected.[114] By reversing the opioid element of respiratory depression, naloxone is effective even when heroin has been taken with other depressants.[32 52 59 158]

There are three main drawbacks. First, the risk of adverse reactions,[159] though in Britain these seem very rare.[98] Secondly, naloxone lasts only from half an hour to an hour,[9] after which respiratory depression due to long-acting drugs such as methadone may return.[45] In theory, unusually high doses of heroin could also linger long enough to bounce back.[9] In practice, there are no known deaths due to this cause and heroin users who have refused hospital admission after being given naloxone have not later become casualties.[28] The third drawback is that antagonists precipitate withdrawal. With naloxone, at least this will be over usually within 40 minutes[157] – worth enduring to avoid death or lasting damage.

Naloxone is best given via a drip. This allows the strength to be adjusted to the patient's response, minimising total intake[159] yet enabling it to be continued as long as needed.[157] Though this is the ideal, administration 'in the street' by paramedics or doctors to patients who recover and then walk away has not proved risky.[160 161] In Britain ambulances do not always carry naloxone and crews are not always trained to administer it, gaps which official advisers have recommended be filled.[20] They also advised drug services to stock naloxone and to train staff in resuscitation.

Naloxone does not make other life-saving techniques redundant,[20 161] and these can in themselves be effective. Staff in Swiss and German injecting rooms instead use oxygen masks and resuscitation bags. If clients do not revive, an ambulance is called. No fatality has been recorded.[152]

Self preservation

Overdose is a common experience among heroin addicts, but translating these experiences into motivation for self-protection faces several obstacles.

Perhaps because for most such events are infrequent, levels of concern and action often fall short of what might be expected. In Sydney and Adelaide just 20% of heroin injectors believed they were likely to overdose and over 70% had barely been troubled by the prospect. Experience of overdose did little to heighten concern. Nevertheless, from 70% to virtually 100% employed some anti-overdose tactic such as frequenting the same dealer and not taking other drugs, and a large minority split their usual dose when faced with a new batch of heroin (though few did so every time[26]).[35 36] Such attempts seemed partially successful: in Sydney, 66% who tried them had overdosed compared to 79% of the remainder.[26] In Adelaide, the tactic used by most respondents was not to take more than they knew they could tolerate – effective only if they also knew their tolerance level, the purity and weight of the dose, and the potential impact of other drugs.

These studies suggest that most heroin injectors want to protect themselves, but that their tactics are often sub-optimal and inconsistently applied. Dangerous practices such as injecting alone and taking alcohol or benzodiazepines are common. Considerable scope remains for improving self-protection among those who practise it and encouraging the remainder to do so. There have been calls for "aggressive preventive education"[1] covering depressant drugs,[26 28 35 36 43] tolerance levels after breaks in use,[26 28 43 59] sampling new purchases,[35] and lone use[26 35 54] or use behind locked doors.[36] Drug services are usually seen as the sources of this education, with residential services and prisons[36] having a special responsibility to warn about loss of tolerance. Whether such advice really can prevent overdose remains to be seen. Some suggestions (such not drinking alcohol with heroin) are so well grounded that if implemented they will almost certainly save lives. Others (eg, sampling the dose) have only weak research support and, if ineffective, risk creating a false sense of security.

There is nothing inevitable about the deaths. Just as seat belt laws reduced the road toll, new measures can reduce the drug toll

Only a sharper, more personal awareness of risk[35] will motivate some addicts to consistently translate knowledge into action. Others do not feel that their life is worth preserving.[33] For these groups interventions will need to generate motivation as well as knowledge.[34] Even then self-preservation can give way to the urgency of avoiding withdrawal and the exigencies of street use *part I*, p. 17.

The tactics most confidently proposed are intended to prevent overdose, but there may also be a role for preventing an overdose becoming life threatening. Death is rarely immediate;[25 39 47 54] delays of hours are common,[25 46 54] giving those around the user time to intervene. Using heroin alone or cut off by a locked door does not seem to greatly increase the risk of overdose,[26 32 36] but does greatly increase the risk of an overdose becoming fatal. In Australian studies around half those who died were actually or effectively alone.[25 54]

However, some users have only themselves to call on. The time available to them will be cut short by unconsciousness, but may still be long enough for those sensitised to the risk to call for help and perhaps also to self-administer a pre-loaded naloxone syringe.[98] The same presumably applies to naloxone nasal sprays if these prove effective.[9] Self administration sidesteps legal problems with administering naloxone to other people but otherwise involves similar issues *Take-home naloxone.*

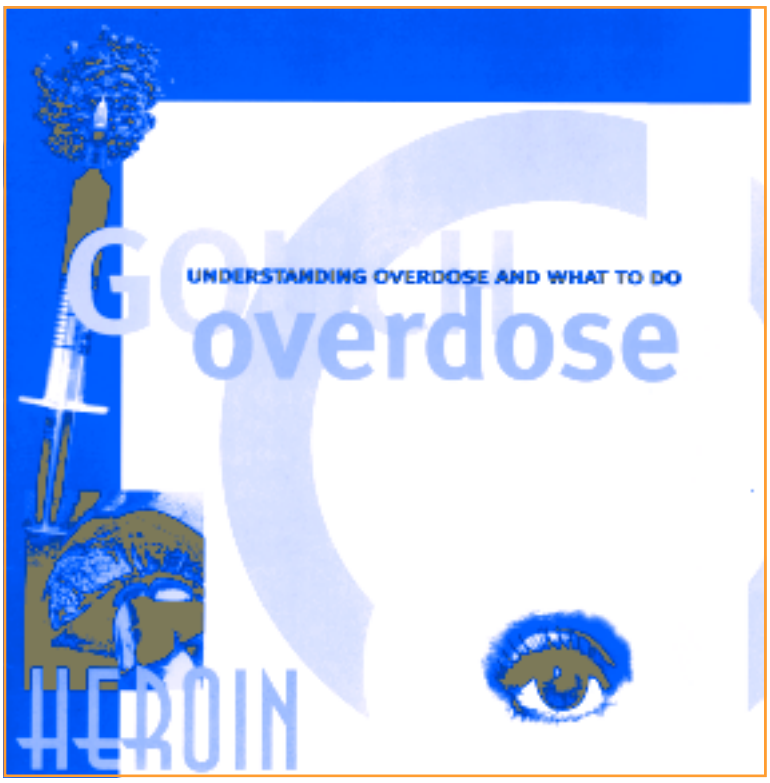
Mutual preservation

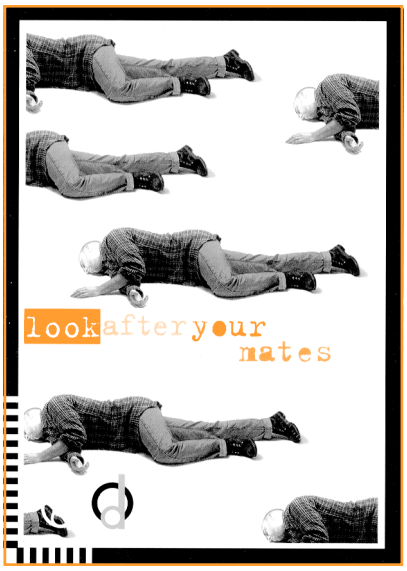
Overdoses usually occur in the user's home or that of a friend, and in the presence of someone else who could intervene,[36 46] often a friend or partner[162] who is themselves a heroin user.[27] For example, in samples of injectors and methadone clients in London, 80% of recent overdoses had occurred in these settings. About the same proportion were in company.[32] Among the injectors, on 60% of occasions witnesses included a close friend and on 34% a sexual partner.[31]

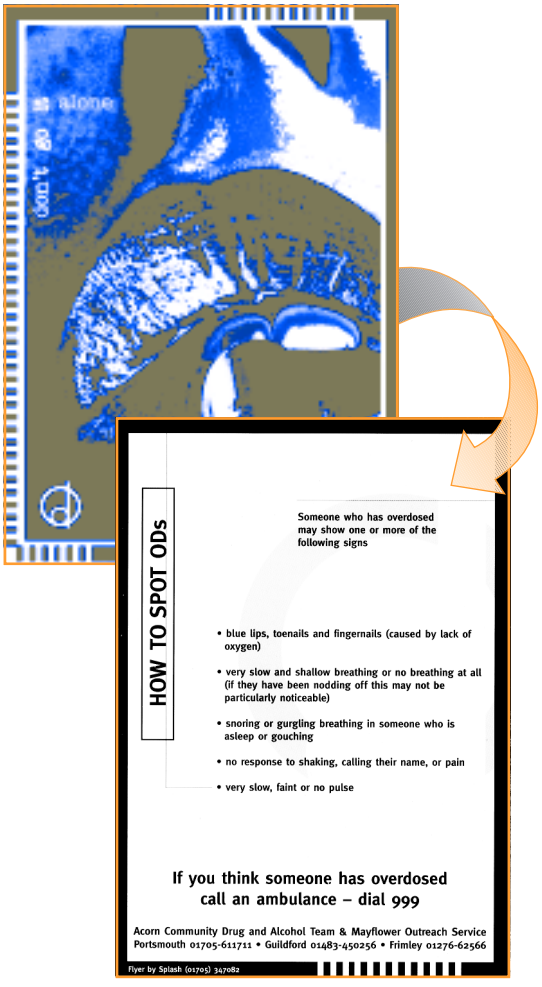
Most established heroin addicts have experienced not just their own non-fatal overdoses but those of others, often within the last few months,[32 36 162] and in London around 1 in 5 or more had witnessed a fatal incident. Even relatively inexperienced heroin users in Britain have a high chance of witnessing an overdose.[43]

Such statistics suggest that a high proportion of overdose deaths could be prevented through effective mutual aid, but first the observer has to recognise the danger. Generally the warning signs cited by addicts are valid indicators.[36 162] Commonly cited are discolouration of the mouth or face ('turning blue' – due to lack of oxygen) and collapse or unconsciousness, less commonly breathing difficulties.[31 36 43 50 162]

But some important signs are known only to a minority and few heroin users can recite all the major ones. For example, snoring or gurgling are among the first signs of impending overdose, yet in Adelaide just 1 in 7 heroin users spotlighted them.[36] In other studies they do not seem to have been cited often enough to be worth noting. The net result must be that identification of overdose hinges on whether the current symptoms happen to match those known to the observer. Lack of knowledge and the difficulty of distinguishing impending coma from the drowsiness of the heroin experience[26] mean that the symptoms which alert onlookers generally occur when overdose is well advanced. Earlier signs may be discounted because they have been witnessed in the past without ill effect.[36]







From the Acorn and Mayflower projects in the south of England, a rare attempt to translate overdose prevention research findings into health promotion literature for drug users. Featured postcards are a selection from a comprehensive pack. On the reverse of each is advice solidly based on evidence of the kind reviewed in parts I and II of this article. A booklet for drug users pulls it all together. Available from Acorn Community Drug and Alcohol Team and Mayflower Outreach Service, phone 01276 670883.

Booklet and cards (now a series of 16) have recently been updated. Due to printing limitations colours have been altered.

An agreement among local services enabled them to reassure drug users worried about calling an ambulance to an overdose victim.
Due to printing limitations colours have been altered.

Having identified overdose, how do addicts respond? Often nothing is done and more often, nothing very effective. In Britain one study showed that just a quarter did probably the most important thing – call an ambulance and wait for it to arrive. Just over a third called at all, and about a third each employed the recovery position or mouth to mouth resuscitation. Favourite tactics were slapping the sufferer and walking them round the room.[20] From the other side – that of the overdoser – under half of a sample in London recalled being taken to hospital on the last occasion and about a quarter went by ambulance.[31] In Australia half the heroin users who had seen an overdose had called an ambulance, generally within minutes, but rarely was this their initial response.[36 162] Because overdoses may be well advanced before being recognised, even small delays can be decisive.

Such intervention as does occur can save lives. Intervention attempts and calling an ambulance occur much more often at non-fatal than at fatal incidents.[25 54]

Suggestions for improving mutual aid include: training in overdose assessment;[9 36] advising immediate emergency calls[20 25 28 31 36 46 54 162] and training in effective calls;[9] encouraging witnesses to stay until medical help arrives;[20] training in and encouraging use of resuscitation[1 28 46 162] and first aid;[9 20 31 163] and provision of naloxone.[1 25 28 31 32 36 54 98 162 164] Training may need to emphasise that resuscitation should be seen as bridging the crucial gap between overdose being noticed and the arrival of emergency services, not as an alternative to immediately summoning those services.

Drug service clients are the most convenient targets for training and education, and among those most likely to witness overdose.[31] Ways to spread information beyond treatment clients include educating needle exchange users and recruiting treatment clients as peer educators.[28]

Barriers to mutual aid

The culture of friends and partners using drugs together means that heroin users who witness an overdose are usually themselves intoxicated,[162] not the best condition in which to save lives. Encouraging staggered use would run up against the same social niceties which see drinkers preferring to stay in step. Since overdoses often occur hours later, a safe interval would mean that friends and partners could no longer share the heroin experience. It might also be seen as an unsociable form of Russian roulette in which the first user tests the dose. If such considerations dictate that witnesses are likely to be intoxicated, then the techniques to be used by them should be as simple as is consistent with their being effective – another argument for stressing the simplest of all, an immediate emergency call.

In Australia fear of police involvement limits the extent to which drug users at an overdose immediately call an ambulance. Mainly for this reason, a quarter of the heroin users who had seen an overdose in Sydney[162] and a third in Adelaide[36] had either not made or delaying making an emergency call. Outstanding warrants and fear of manslaughter charges were their main concerns, the latter possibly related to having administered the injection or provided the heroin. In Britain, too, faced with an overdose only a minority of heroin misusers immediately call an ambulance, but one study of treatment clients found that this was not because they feared arrest.[165]

UK official advisers were sufficiently concerned to stress that ambulance services should not routinely summon police, and that if police are called the presumption should be that onlookers are not prosecuted.[20] Similar policies are advocated in Australia.[36 162] However, overdose incidents may involve violence, harm to children, and crimes such as manslaughter or attempted murder. Hard and fast rules on when to call police will be difficult to formulate and absolute assurances cannot be given.[20]

Take-home naloxone

Naloxone is an effective antidote to heroin overdose and one with negligible abuse potential. The prospect of a precipitated withdrawal would deter its use by addicts other than to save lives. If it developed, an illicit market would simply supplement legal distribution.[27 98] Relative to the potential benefits, the risks seem minimal.[27 163]

So that witnesses can administer it, there have been calls for naloxone to be stored in every heroin user's home[164] or even (to cater for novice users) in every household's medicine cabinet. A suggested first step is its provision to known heroin addicts, which generally means those seen at drug services.[165] Among them, the priority would be clients who inject and have a history of non-fatal overdose, those leaving treatment or prison,[36] and clients with a history of heavy drinking or use of depressant drugs.

The main obstacles are legal. Under Britain's Medicines Act, naloxone is available only on prescription. It can only be administered to the person named on the prescription and in accordance with the doctor's instructions.[166] There seems no problem with heroin users being prescribed naloxone, storing it at home, and telling their friends where it is and what to do in an emergency, a worthwhile step since overdoses typically occur at home in the company of friends familiar with injecting.[27]

But it *is* illegal to administer naloxone to someone for whom it has *not* been prescribed, as might happen if you administered your own supplies to a friend who overdosed in your home. Whether naloxone can be prescribed to a parent, partner, or drug service staff to administer to heroin users is questionable.[165] Legal impediments and the cost to the health service of the prescriptions[164] have led some to consider changing naloxone's prescription-only status[27 98] or at least making arrangements to allow the drug to be given to non-medical personnel to administer to others.[20]

If such arrangements were made, would heroin users deploy naloxone, and do so appropriately? Pilot schemes in Berlin and Jersey (the latter using a pre-loaded syringe) found that drug users given naloxone will use it appropriately to save lives, with no apparent adverse consequences.[190] In Berlin 124 opiate users were trained in resuscitation and provided naloxone to take away. Over 16 months, 22 are known to have used their supplies 29 times. All 29 recipients recovered and in 9 out of 10 cases naloxone was given in circumstances when it may have been of benefit. In Chicago 40 people have been revived with naloxone handed to drug users as part of an anti-overdose training programme.[191] Also in the USA, a state health agency has issued naloxone syringes to doctors to prescribe to addicts for use on themselves and others.[192]

In London 39 of the 44 methadone patients who had witnessed an overdose said that on the last occasion they would have administered naloxone. Had they done so, at least two-thirds of the fatalities they had seen might have been avoided.[32] Though many lives might be saved, a nationwide scheme would probably not reap such dramatic benefits.[163 164] Overdoses which end in death are more likely to occur in private or on the street than are non-fatal incidents, and what people say they would do and what they actually do may differ; by no means all addicts employ even very simple

interventions in the face of an overdose. Finally, the addicts questioned were those who had *already* witnessed an overdose; the full sample seemed less enthusiastic.[167]

One concern is that heroin users would risk higher doses knowing that an antidote was to hand.[27] Studies in London[32] and Australia[27] found that just 5% of heroin users thought this was a possibility. In Australia, the vast majority argued instead that they would not want to endure the withdrawal triggered by naloxone and that heroin was too expensive to 'waste'. For most users, rather than over-reliance, the problem might be reluctance to take or administer naloxone. A related concern is that naloxone might engender a false sense that heroin was safe[163] and encourage use by diluting the fear of death.[27] Where harm reduction is controversial, naloxone might be opposed as condoning heroin use.[27] Limiting distribution to established heroin addicts would weaken these objections but fail to protect novice and occasional users, though in practice overdose is rare in these groups.

Other concerns are that naloxone might displace rather than supplement routine but effective resuscitation techniques.[163] Ways round this include supplying naloxone as part of a resuscitation training programme and in a kit containing instructions on other techniques,[165] the approach used in Chicago[191] and seemingly also in Jersey and Berlin.[190] To make administering the drug quick and easy, the kit might contain one or two[164] pre-loaded syringes. These suggestions would, of course, increase the cost of a naloxone-based intervention.[190]

Ideally naloxone would bridge the gap between overdose and ambulance, a role for which its short action is no disadvantage.[163] Take-home naloxone would also provide an alternative for heroin users and their companions who remain reluctant to call an ambulance.[27 162] A possible outcome is that still fewer will call, reasoning that naloxone makes it unnecessary to risk police attention. In Berlin an ambulance was called in just 9 of the 29 times when naloxone was administered by drug users.[190]

Addicts and their companions during heroin use would normally be experienced injectors willing and able to administer naloxone.[27] Non-injecting family and friends would probably also welcome training which could help save the life of someone close to them,[165] but for these associates training in standard resuscitation techniques might be more appropriate.

The role of drug services

Overdoses tend to occur among older, long-term addicts,[28] the ones most likely to be in treatment. For this reason it makes sense to locate self protection and mutual aid interventions in treatment services. But an enquiry recently expressed concern that some services were "complacent" about preventing deaths and said that many others should improve their response, primarily by developing anti-overdose policies.[20] How many have developed such policies is unclear, but an acceleration might now be occurring in line with the Anti-Drugs Coordinating Unit's decision to implement the enquiry's recommendations in 2000/2001.[168] Policies should be fronted wherever feasible by a continuing risk assessment of every client leading to an individualised action plan.[20] Assessing suicide risk should be an important and routine element,[73] particularly as this is the risk tackled least well by methadone maintenance. Heavy drinking is widespread among opiate addicts[44] and contributes to many deaths, yet is inadequately assessed and addressed by British services.[169 170]

Some agencies can reduce risk not just by advising or training their clients, but also by amending their treatment or providing further services. Prescriptions could be reviewed or initiated, referrals made for psychiatric and social help, and friends and families drawn into the anti-overdose effort. Drug services could also encourage and enable clients to help others, an intervention which government advisers said they expect all to provide.[20]

Only a few British drug services have produced their own overdose prevention literature p. 7. England's national information service stocks only a wall chart, useful for coping with an overdose but not geared to preventing such incidents.[171] New materials prepared with government funding should help plug the gap p. 5.

Emergency room follow up

The minority of heroin users who frequently overdose probably also frequent their local accident and emergency units. In Brighton and Hove, 28 of the 36 people recorded as dying from drug-related causes in 1998 had previously attended the local unit, on average six times each; about half had been less than a year before death. Though half had been admitted to the hospital, just 10 had been referred for psychiatric or social help. In 20 of the deaths

The Scottish experience

In 1992 evidence of widespread abuse by injection of the opioid painkiller buprenorphine led to a voluntary ban on its prescribing in Glasgow.[182] Immediately the city saw a dramatic increase in its previously low overdose death rate as addicts took heroin with (mainly) prescribed benzodiazepines instead of the much safer buprenorphine.[22 24 39 128] At the time long-term methadone prescribing in the city was unstructured and largely unavailable.[83 183] The contrast was drawn with Edinburgh, which had a well established, centrally organised methadone programme; there a much higher percentage of overdose deaths involved methadone, but overall there were far fewer.[22]

In 1994 a methadone programme was established in Glasgow[184] but hopes that this would reduce heroin-related deaths[128] were not realised.[22] Instead *methadone* fatalities in the region increased from an average of seven in the three years before the service to 38 in the following three years.[111] Unlike the Lothian service, from the start Glasgow introduced supervised consumption which from 1996 was strongly encouraged and spread through the rest of the region. Almost certainly as a result, in relation to the amount being prescribed, methadone deaths fell steeply.[20] However, the overall number of deaths from drugs seems to have changed little[10 24 133] since 1994,[185] the first year of the current recording system, and they still overwhelmingly involve heroin and benzodiazepines.[10] If, as suggested,[184 186] the number of injectors in the city has decreased over the 1990s, this cannot be considered a good outcome.

There were early warnings that methadone could not be the solution to the upsurge in overdose deaths.

Recently the high[187] and rising death rate from diverted methadone in Edinburgh has led the city's methadone service to consider Glasgow-style supervised consumption.[188] Diverted methadone is far more available in Edinburgh than in Glasgow: a fifth of new treatment clients use the drug without being prescribed it compared to 3–5% in Glasgow.[129 189] Methadone deaths may be the price for an accessible service which reaches most of Edinburgh's drug abusers,[186] protecting the patients from heroin overdose but creating a spillover risk among non-patients.

Though the full story has yet to be told, these events demonstrate the impact that prescribing practices and controls can have on the number of overdose deaths and on the drugs involved in those deaths. It also demonstrates that the impact of an oral methadone service depends on the environment into which it is introduced. There were early warnings that Glasgow's indiscriminate injecting culture[24] and the link there between drugs and poverty[39 128] would mean that a methadone service could not be the solution to the upsurge in overdose deaths.[129]

heroin was at least one of the drugs taken.[172] In London in 1982 about a third of the people who attended emergency units for drug-related reasons (nearly all overdoses) had also attended with an overdose in the previous year.[126] Similar recidivism has been noted in Vienna.[161]

Such statistics have encouraged calls for emergency units to provide contact and advice cards to known drug users, inform the patient's GP or other principal care worker about the incident,[20] establish criteria which trigger referral to social, psychiatric and substance misuse services, and to screen admitted patients for drug abuse and offer services to those identified. These calls are tempered with the realisation that intervention beyond the immediate emergency may not be realistic or considered a priority by emergency staff. Specialist staff may need to be employed if these tactics are to be implemented, increasing costs.[172]

Prison throughcare

Throughcare for drug users is receiving greater emphasis[3 173 174] and is one of the main responsibilities of the drug help services (CARATs)[175] available in every prison in England and Wales.[168] In future these initiatives may help make the post-release period less of an overdose hotspot, but research to date suggests that throughcare suffers from poor organisation and that relapse is common unless treatment in prison is maintained on release.[176] Doubts remain about whether services outside prison are sufficient to maintain this continuity.[177] Drug testing should help identify inmates in need of treatment,[3] but this role has been underdeveloped.[178] The carrot and stick balance still encourages prisoners to hide their addiction history.[179]

In-prison methadone maintenance is rare and faces implementation barriers,[180] but could encourage opiate addicted inmates to identify themselves, avoid interruption of pre-prison treatment,[106] and maintain tolerance levels so that relapse on release is less dangerous.[36] It makes particular sense for short-term and remand prisoners.[20 174] Instead prison treatment and post-release plans emphasise detoxification[168] followed by drug-free assistance: less than a third of the prisoners in England and Wales surveyed in 1997 who were on methadone before prison continued to receive it.[69] This approach places opiate addicts who are unable to forgo drug use at risk.[174 175 179] Scottish plans represent a step forward, explicitly recognising the need to "minimise the dangers of reduced tolerance levels on release from prison".[174]

Given the low take-up of treatment by addicted prisoners both before and after sentence,[108] release arrangements may need to be highly proactive – not just giving contact addresses and making appointments, but accompanying (ex)prisoners to the service.[174] Take-up is still likely to be poor unless the transition occurs while the offender remains under legal supervision.[179 181]

Not inevitable

As expressed in the Australian Labor Party's new plan for illicit drugs, "There is nothing 'inevitable' about the death of drug users. Just as introducing compulsory seat belt laws reduced the road toll, so too can introducing new preventative measures reduce the drug toll." The evidence reviewed here and in part I clearly shows that overdose death is preventable and that prevention is within our reach. Ways to reduce the damage include increasing access to treatment, developing naloxone interventions for when overdoses do occur, and offering anti-overdose training to addicts in treatment and out of treatment. Whilst these seem the most promising tactics and the priorities, they will need to be underpinned by the same order of determination and resourcing which fear of HIV spreading to the general population generated in the 1980s, and which fear of addiction-driven crime is generating in the 1990s. One difference is that overdose death is confined to drug users – the rest of us are threatened only indirectly or not at all.

LINKS *Overdosing on opiates. Part I • causes*, issue 4. *Nuggets* **4.6 3.2 3.1 2.1**

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