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▶ Overdose training and take-home naloxone for opiate users: prospective cohort study of impact on knowledge and attitudes and subsequent management of overdoses.

Strang J., Manning V., Mayet S. et al.
Addiction: 2008, 103(10), p. 1648–1657.
Request reprint using your default e-mail program or write to Dr Strang at j.strang@iop.kcl.ac.uk

As concern mounts about Britain's failure to reverse the recent growth in drug-related deaths, the first large-scale UK follow-up study has assessed the impact of training in overdose recognition and management featuring the opiate blocking drug naloxone.

Summary Most opiate overdoses happen in the presence of a witness and often in the user's own home. Prompt response can be crucial to avoid death due to respiratory depression. Equipping people likely to be with the user to take effective action while awaiting the arrival of emergency services could save many lives. In addition to training in recognising overdose and in resuscitation methods, enabling drug users and their associates to administer the opiate antagonist naloxone can greatly improve the immediate response to overdose. The medication rapidly reverses the effects of opiate-type drugs, including respiratory depression. In the UK naloxone programmes were hampered by the prescription-only status of the medication, but in 2005 the law was amended to permit emergency administration by any member of the public. This is the first large-scale UK follow-up study to assess the impact (including the degree to which the training was later put in to effect) of training in overdose recognition and management featuring naloxone provision.

Staff in 20 drug services across England were trained, before themselves recruiting and training 239 opiate-using patients attending their services and providing them with a take-home supply of naloxone. Nearly two thirds of the patients were attending as outpatients. A questionnaire completed by trainees before and immediately after the training revealed improvements in identification of factors which heighten the risk of overdose, awareness of the signs of overdose, what constitutes an appropriate response to these signs, awareness of the role of naloxone and willingness to administer the drug,

their confidence in their ability to do so, knowledge of how to administer it, of how long naloxone remains active, and awareness that they would still need to call an ambulance.

Typically just under three months later, 78% of the trainees were interviewed (mainly by their key workers) and completed a further knowledge test. Interview and test revealed retained or improved knowledge of the signs of overdose and appropriate responses, and almost universal confidence that they would be willing and able to manage an overdose situation and do what was needed to save life. Spreading the impact, 28% of the trainees had subsequently trained someone else who could administer naloxone to them in the event of an overdose. Only 9% had failed to receive the planned supply of naloxone, in each case because they had left treatment prematurely or were still in rehabilitation; 79% still had their supply. Ten out of the 172 who responded to this question had used naloxone to reverse an overdose suffered by another person, mostly encountering little difficulty during the administration and no unexpected adverse effects. Though there was no serious aggression, four recipients had been angry or complained that the medication had spoilt their opiate experience or precipitated withdrawal. These events were among the 18 overdoses either witnessed or experienced by the trainees. When naloxone was not administered, one of the overdoses ended in a death; none did so when it was used.

The authors concluded that training in overdose management can successfully be given to drug users in treatment, resulting in substantially improved knowledge and competence. Beyond the high numbers of drug users trained directly, knowledge was spread to their families and peers. Though implementation was relatively low, it was detectable even within the study's three-month follow-up period. No unexpected adverse reactions were identified. Benefits were primarily to other people to whom trainees administered their naloxone. Having demonstrated its potential, the authors recommended further studies to examine whether wider overdose management training and naloxone provision could reduce opiate overdose fatalities.

FINDINGS A later report from the study followed up a subsample of 70 trainees (nearly all from Birmingham) for six months after the training. The 46 recontacted at this time and three months earlier had retained much of what they had been taught. They had witnessed 16 overdoses since the training and generally responded appropriately, but none were known to have administered naloxone. For many this was because they were reluctant to carry the pre-loaded syringe around with them, partly due to fear of being identified as a drug user, and partly because some had completed treatment intended to divorce them from drug use and by extension, drug using associates, including those who might overdose.

This study came at a time of heightened concern about the UK's failure to reverse the recent growth in drug-related deaths, thiugh since then there has been a slight downturn. In England and Wales drug poisoning deaths totalled 2747 in 2010, of which 1784 were linked to drug misuse and 791 to heroin/morphine, in all three cases slight reductions from the peaks of 2008. Scotland in 2010 recorded 485 drug-related deaths, of which 312 were considered to have been caused by drug abuse and 254 involved heroin/morphine. These were all appreciable downturns from the peak figures of respectively 574 (in 2008), 380 (in 2009) and 324 (in 2008). However, analyses of trends revealed by averaging annual fluctuations suggested that it was too soon to be confident that long-term upward trends had reversed. A more detailed analysis

highlighted the fact that 60% of cases had been in contact with drug treatment services, nearly 40% in the past six months, suggesting there had been chances to intervene which for these patients had been insufficient to avoid death.

Medications which block and (if opiates have been taken) reverse the effects of opiate-type drugs have an obvious role in preventing overdose becoming fatal. Of the opiate-blocking drugs, its rapid action and safety makes injectable naloxone the medication of choice. Recognising this, in 2005 the law changed in the UK to permit emergency administration of naloxone not just to the person for whom it was prescribed, but also to other people. See background notes for more on safety and effectiveness and the advantages of intramuscular administration.

Naloxone's lifesaving potential is now being realised in Britain, but still on a pilot basis rather than as a mass campaign. In 2002 the English drug strategy made a national policy commitment to reducing drug-related deaths, but the 2004 reduction target was missed and after then deaths increased. The featured study was funded by England's National Treatment Agency for Substance Misuse (NTA), which in June 2009 announced that 16 sites in England will pilot overdose training involving naloxone for about 950 family members and carers of drug users. A study published in 2008 had established the need for and potential acceptability of such an initiative. It found that 31 of 147 carers of drug users attending local support groups who responded to the study's survey had witnessed an overdose, only about a quarter had received advice on overdose management, but nearly 9 in 10 would welcome such advice, including on naloxone administration.

But the NTA study foundered somewhat because of recruitment difficulties. In the end the 16 pilot sites recruited 495 instead of 950 carers for the training over eight months, on average 31 carers per site and just under four per month. Training was resisted by some families as well as drug users, who wanted detoxification and a spell in prison to signal to the drug user and to others that their relative was starting a new drug-free life. There were also concerns that training might expose the trainee as a drug user to their families and prison authorities. Concern that getting involved in overdose prevention would mark them out as a drug user was also found among homeless drug users in England interviewed about using naloxone.

Reducing drug-related deaths has a high policy profile in Scotland, where per head of population deaths are far common than in the rest of the UK. There a national forum is tracking progress on its recommendations for reducing deaths, including naloxone training and provision. Following successful pilots, Glasgow and Lanarkshire are extending their naloxone programmes and other areas are considering similar initiatives.

Though the literature on naloxone provision by the public is new and still scarce, it is unanimous in its support, while also highlighting issues which need to be addressed in training programmes. In 2005 a review found only "anecdotal, although promising" evidence. Published in 2008, a review of literature on overdose prevention conducted for the Scottish government found in respect of naloxone "a consensus among the reviewed papers that there is a potential to prevent many opiate overdose deaths" and recommended its inclusion among the interventions offered to people who might witness an overdose. See background notes for major US and European studies suggesting that

many hundreds of lives have been saved.

While naloxone can certainly be a contributor to reducing deaths, it is clearly not the whole solution. First is the fact that fatal overdoses in particular tend to happen when the person is alone and/or out on the street. One concern is that naloxone might displace rather than supplement routine resuscitation techniques which remain important in the period before naloxone takes effect. Studies suggest too that despite training, having naloxone available might offer a further excuse for drug users who witness an overdose to avoid contact with the authorities by calling for an ambulance. There is also the prospect that people revived by naloxone might be unhappy about having an expensive heroin high reversed and/or withdrawal precipitated, deterring its use. Though such concerns cannot be dismissed, most can be addressed in volunteer recruitment and training programmes, and they do not threaten the potential for such programmes to on balance save very many lives. See background notes for details and relevant studies.

For Britain in particular the featured study advances knowledge considerably, demonstrating the feasibility of training drug users who are in treatment and its effectiveness in equipping them to recognise an overdose and act effectively to save lives. There is however an inherent contradiction between treatment which the patient hopes and expects to divorce them from drug use and drug using circles, and being provided with training and medication of direct use only if they stay sufficiently involved in such circles to witness an overdose.

This contradiction was apparent to many in the subsample from the featured study referred to above, and also to homeless drug users in England interviewed about using naloxone, making some reluctant to be equipped with the medication. It may be one reason why in the featured study, though nearly all the followed-up sample were in substitute prescribing treatment programmes, 90% continued to use heroin; some patients determined to move fully away from drugs may have refused or not been asked to join the study. To maximise coverage and achieve the greatest public health gains, naloxone programmes will (as they are) have to move beyond treatment populations to families and carers and out-of-treatment heroin users. From their pre-training responses, it seems possible too that the sample were unusually knowledgeable about and committed to overdose prevention. Such good results may not be maintained if overdose prevention training involving naloxone is implemented more widely.

Further guidance is available from the UK National Treatment Agency and from the Chicago Recovery Alliance, which has produced a freely available training video. In 2008 staff from one of the English NHS trusts which will (see above) be piloting naloxone training for families and carers produced a UK-focused practical guide to naloxone prescribing, training and use. A UK web site also offers advice to professionals on take-home naloxone.

Thanks for their comments on this entry in draft to John Strang of the National Addiction Centre in London, UK. Commentators bear no responsibility for the text including the interpretations and any remaining errors.

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