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References

1. Babor T. F., Higgins-Biddle J. C., Saunders J. B., Motneiro M. G. *The Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Care*. Geneva: World Health Organization; 2001.
2. Dawson D. A., Grant B. F., Stinson F. S., Zhou Y. Effectiveness of the derived Alcohol Use Disorders Identification Test (AUDIT-C) in screening for alcohol use disorders and risk drinking in the US general population. *Alcohol Clin Exp Res* 2005; **29**: 844–54.
3. Ialomiteanu A. R., Hamilton H. A., Adlaf E. M., Mann R. E. *CAMH Monitor eReport: Substance Use, Mental Health and Well-Being Among Ontario Adults, 1977–2015*. CAMH Research Document Series, no. 45. Toronto, ON: Centre for Addiction and Mental Health; 2016.
4. Cunningham J. A., Wild T. C., Cordingley J., van Mierlo T., Humphreys K. A randomized controlled trial of an internet-based intervention for alcohol abusers. *Addiction* 2009; **104**: 2023–32.

POOR IMPLEMENTATION OF NALOXONE NEEDS TO BE BETTER UNDERSTOOD IN ORDER TO SAVE LIVES

Naloxone is a remarkably specific and effective antagonist that, within a couple of minutes of injection, can reverse the life-threatening respiratory depression causing heroin/opiate overdose deaths. Naloxone unquestionably saves lives. Additionally, take-home naloxone (THN) programmes enable drug users and their close contacts to reduce fatalities by administering naloxone themselves.

Strategies for distributing naloxone will, however, only make a difference if they make sense on the ground. Sufficient training needs to be provided to a wide number of potential lay responders alongside an adequate pre-supply of naloxone so that the treatment is in the hands of someone nearby and willing to intervene to keep the overdose victim alive over the critical period. To date, there has been only modest implementation of THN in most communities.

Suboptimal implementation of THN needs to be understood more clearly so that it can be addressed. Failure to do so costs lives. Deaths from overdose with heroin and with opioid medications continue and are increasing. However uncomfortable it may be, it is important to consider all the reasons why actual implementation of THN is so poor. This requires systematic empirical investigation and substantial scientific endeavour.

In the absence of any current evidence, we spoke to members of our Addiction Service User Research Group (SURG) (http://www.kcl.ac.uk/ioppn/depts/addictions/research/SURG/index.aspx) to canvass their views. Group members include individuals who have overdosed personally, witnessed overdoses, received naloxone, administered naloxone and trained peers in how to administer naloxone: 'experts by experience'. With remarkable ease, they identified a wide range of factors that inhibit the current use and effectiveness of THN.

We do not claim that the factors raised are exhaustive, we do not attempt to weight the factors by prevalence or importance and we do not propose solutions. However, we do argue that all the issues reported need very careful consideration by those seeking to improve the diffusion and effectiveness of THN programmes in the future. The factors identified by our 'experts by experience' are as follows:

1 Many opiate users do not approve of, or like, injectable naloxone, as they believe it will put them into withdrawals and waste their drugs
2 Many non-opiate users are unwilling to carry injectable naloxone as they do not believe they will encounter an overdose as they go about their daily lives
3 Many people (opiate users and non-opiate users) will not carry or use injectable naloxone as they are afraid of needles
4 Many people in recovery will not carry or use injectable naloxone as the needle can trigger a desire to use drugs
5 Many people (opiate users and non-opiate users) will not carry injectable naloxone as the pack is too bulky/indiscreet
6 Many people (opiate users and non-opiate users) will not carry injectable naloxone as they are afraid of being stopped by the police
7 Many people (opiate users and non-opiate users) will not carry injectable naloxone as it is a stigmatizing (and stigmatized) medication
8 Many opiate users and non-opiate users (including some drug workers) will not inject naloxone into an overdose victim because they feel that they do not have enough knowledge about how much to inject or when to inject it
9 Many people (opiate users and non-opiate users) will not succeed in injecting naloxone into an overdose victim during an emergency situation as they will panic and not be able to assemble and administer the injection
10 Many people (opiate users and non-opiate users) will not inject naloxone as they are anxious about needle stick injuries and blood-borne viruses

11 Many former opiate users will not keep injectable naloxone in the house as they do not want to contemplate the possibility that they might use drugs again
12 Many family members will not keep injectable naloxone in the house or administer an injection as they do not want to be associated with, or appear to condone, drug-taking
13 Naloxone resuscitation is undermined when people immediately use opiates again (in an attempt to overcome the naloxone)
14 Naloxone resuscitation is undermined when opiate users do not change their behaviour after an overdose, and therefore overdose again on a later occasion and die
15 Naloxone does not save opiate users who overdose alone (often in hostel settings)

Declaration of interests

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