naloxone can prevent heroin overdose deaths: so why the lack of implementation?

Professor John Strang
National Addiction Centre, London, UK
declaration

* DH, NTA, Home Office, NACD, WHO, UNODC

* Diamo, Reckitt-Benkiser, Schering-Plough, Genus-Britannia, GW, Napp, Titan, Catalent, Auralis

* Phoenix House, Clouds House, Action on Addiction, Society for the Study of Addiction, KCA, …
Don’t forget ….

Unmet need
  Waiting lists
  incomplete penetration

Poorly-met need
  Sub-optimal dosing
  Unacceptable reliance on drug alone
  Fondness for eccentricity

Iatrogenic harm
  In our own hands
Structure of today’s talk:
take-away naloxone and overdose deaths

What is the problem?

When does it occur?

How could naloxone help?

Areas of confusion
Structure of today’s talk: take-away naloxone and overdose deaths

What is the problem?

When does it occur?

How could naloxone help?

Areas of confusion
PO$_2$ Post-Injection

Combined sessions

Minutes post-injection
Oxygen saturation: IV versus IM

Minutes post-injection

SpO2 (%)
Oxygen saturation: IV versus IM

SpO2 (%)

Minutes post-injection
Oxygen saturation: case study

Male, age 49
Intravenous diamorphine (6 years)
This dose = 120 mg
Daily dose = 400mg
WHICH DRUG?
## Drug-related deaths in England and Wales 1997 – 2002 (ONS)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Prevalence in general population (use in last year, age 16-59)</th>
<th>No. of deaths in the last 5 years</th>
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<td>Cannabis</td>
<td>10.8%</td>
<td>78</td>
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<tr>
<td>Cocaine</td>
<td>2.4%</td>
<td>508</td>
</tr>
<tr>
<td>Amphetamine</td>
<td>1.5%</td>
<td>436</td>
</tr>
<tr>
<td>Ecstasy</td>
<td>2%</td>
<td>200</td>
</tr>
<tr>
<td>Opiates (inc Heroin, morphine &amp; methadone)</td>
<td>0.2%</td>
<td>6,194</td>
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**Table 2. Total number of drug-related deaths in England with associated substances between 1993 and 2001 (compiled by ONS).**

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1997</th>
<th>2000</th>
<th>2001</th>
<th>(% change)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total annual -England</strong></td>
<td>821</td>
<td>1237</td>
<td>1561</td>
<td>1524</td>
<td>(-2%)</td>
</tr>
<tr>
<td><strong>Heroin and Morphine</strong></td>
<td>187</td>
<td>445</td>
<td>926</td>
<td>889</td>
<td>(-4%)</td>
</tr>
<tr>
<td><strong>Methadone</strong></td>
<td>232</td>
<td>421</td>
<td>238</td>
<td>207</td>
<td>(-13%)</td>
</tr>
<tr>
<td><strong>Cocaine</strong></td>
<td>12</td>
<td>39</td>
<td>80</td>
<td>96</td>
<td>(+20%)</td>
</tr>
<tr>
<td><strong>MDMA/Ecstasy</strong></td>
<td>8</td>
<td>12</td>
<td>36</td>
<td>55</td>
<td>(+53%)</td>
</tr>
</tbody>
</table>
Conclusion number 1: Drugs involved with overdose

HEROIN

Heroin and sedative mixtures
HOW COMMON?
London PAI Study #1: 438 Early Heroin Users

[48% in first 3 years; 45% SDS ≤ 6]

Overdose history among 98 (22%)

Of 309 ever-injectors, 96 (31%) had overdosed

Of 125 never-injectors, 2 (2%) had overdosed

(χ²=44.2, p<0.001 [data missing on 4])

(Gossop, Griffiths, Powis, Williamson and Strang, BMJ, 1996)
HOW COMMON (among injectors)?
London PAI Study #2: 312 injectors

Personal overdose? - 117 (38%)

Witnessed overdose? - 157 (50%)

Witnessed fatal O/D? - 46 (15%)

(Strang, Griffiths, Powis, Fountain, Williamson and Gossop, Drug and Alcohol Review, 1999)
Aus (Adelaide) PAI Study #2: 218 heroin users (i.e. injectors)

Personal overdose? - 48%

Witnessed overdose? - 70%

(Witnessed fatal O/D? - n/a)

(McGregor, Darke, Ali and Christie, Addiction, 1998)
Conclusion number 2

Overdose is common hazard

Overdose frequently witnessed
Resusc training and naloxone?

opiates involved?

home context?

peers present?
### Naloxone? - personal O/D

<table>
<thead>
<tr>
<th></th>
<th>Treatment sample (n=142)</th>
<th>Community sample (n=312)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ever overdosed?</strong></td>
<td>78/142 (55%)</td>
<td>118/312 (38%)</td>
</tr>
<tr>
<td><strong>Last personal overdose...</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-involved opiates</td>
<td>72/78 (92%)</td>
<td>102/118 (86%)</td>
</tr>
<tr>
<td>-at own or friends home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>own home</td>
<td>61/78 (78%)</td>
<td>84/118 (80%)</td>
</tr>
<tr>
<td>friends home</td>
<td>43</td>
<td>52</td>
</tr>
<tr>
<td>-in company of others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sexual partner</td>
<td>66/78 (85%)</td>
<td>95/118 (81%)</td>
</tr>
<tr>
<td>close friends</td>
<td>33</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>57</td>
</tr>
</tbody>
</table>

(Strang, Powis, Best, Vingoe, Griffiths, Taylor, Welch and Gossop, Addiction, 1999)
### Naloxone? - witnessed O/D

<table>
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<th>Treatment sample (n=142)</th>
<th>Community sample (n=312)</th>
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</thead>
<tbody>
<tr>
<td>Ever witnessed overdose?</td>
<td>44/48* (92%)</td>
<td>167/312 (52%)</td>
</tr>
<tr>
<td>Witnessed O/D in last year?</td>
<td>13/48 (27%)</td>
<td>81/312 (26%)</td>
</tr>
<tr>
<td>last overdose witnessed...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-involved opiates</td>
<td>44/44 (100%)</td>
<td>153/159* (96%)</td>
</tr>
<tr>
<td>-O/D by sexual partner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>close friend</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>casual acq.</td>
<td>32</td>
<td>84</td>
</tr>
<tr>
<td>stranger</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

* data collected from only 48  
* data missing on 8 cases  
(Strang, Powis, Best, Vingoe, Griffiths, Taylor, Welch and Gossop, Addiction 1999)
# Naloxone? - witnessed fatal O/D

<table>
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<th>Treatment sample (n=142)</th>
<th>Community sample (n=312)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever witnessed overdose fatality?</td>
<td>14/48* (29%)</td>
<td>55/312 (18%)</td>
</tr>
<tr>
<td>last fatal O/D witnessed...</td>
<td>14/14(100%)</td>
<td>34/38* (89%)</td>
</tr>
<tr>
<td>-involved opiates</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>-death of sexual partner</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>close friend</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>casual acquaintance</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>stranger</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* data collected from only 48 subjects
** data missing on 8 cases
* data available from only 38 subjects

(Strang, Powis, Best, Vingoe, Griffiths, Taylor, Welch and Gossop, Addiction, 1999)
INTERVENTION OPPORTUNITY?

Extensive **witnessing** of overdoses (including fatal outcomes) ...
INTERVENTION OPPORTUNITY?

O.K., so extensive witnessing of overdoses (including fatal outcomes);

but what about resuscitation efforts (even if incorrect)?
**TREATMENT SAMPLE 2b**

**115 methadone maintenance clients**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>For Partner</th>
<th>For Friend</th>
<th>For Family</th>
<th>For Acqaint.</th>
<th>For Stranger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery position</td>
<td>97%</td>
<td>96%</td>
<td>96%</td>
<td>91%</td>
<td>89%</td>
</tr>
<tr>
<td>Mouth-to-mouth</td>
<td>97%</td>
<td>97%</td>
<td>97%</td>
<td>77%</td>
<td>69%</td>
</tr>
<tr>
<td>Walk them about</td>
<td>97%</td>
<td>97%</td>
<td>97%</td>
<td>93%</td>
<td>92%</td>
</tr>
<tr>
<td>Call ambulance</td>
<td>97%</td>
<td>97%</td>
<td>97%</td>
<td>93%</td>
<td>93%</td>
</tr>
<tr>
<td>Wait for ambulance</td>
<td>97%</td>
<td>97%</td>
<td>97%</td>
<td>95%</td>
<td>93%</td>
</tr>
</tbody>
</table>

(Strang, Best, Man, Noble and Gossop, IJDP, 2000)
TREATMENT SAMPLE 2b
115 methadone maintenance clients
(cURRENT OR FORMER INJECTORS)

57 (50%) had previously overdosed
112 (97%) had witnessed an overdose (fuller data on 98)

For last witnessed overdose,

- Mostly friends - 70%
- Partner - 10%
- Acquaintance - 14%
- Stranger - 1%

(Strang, Best, Man, Noble and Gossop, IJDP, 2000)
TREATMENT SAMPLE #2
155 clients in/or seeking methadone treatment

72 (47%) had personal overdose history
128 (83%) had witnessed an overdose (includes 43 witnessing fatality)
Of these 128,
75 (59%) had inflicted pain
71 (55%) had walked them about the room
70 (55%) had called an ambulance***
63 (49%) had waited for the ambulance
58 (45%) had splashed them with water
56 (44%) had placed them in recovery position**
49 (38%) had given mouth-to-mouth resusc*
COMMENTS ON THE ACTIONS TAKEN AT THE LAST WITNESSED OVERDOSE

“I injected her with salt; it brought her back, didn’t need an ambulance”;

“I cleared the air pathways and put an upside down spoon in his mouth”;

“…after going very blue, he was given crack when he started coming round, and that brought him back”;

“I used naloxone, and it saved his life”.

INTERVENTION OPPORTUNITY?

Extensive witnessing of overdoses (including fatal outcomes); AND

Frequent resuscitation efforts (even if incorrect).
Resusc training and naloxone?

opiates involved? - YES

home context? - YES

peers present? - YES
Conclusion number 3: O/D intervention opportunity?  
Yes
Structure of today’s talk:

**take-away naloxone and overdose deaths**

What is the problem?

When does it occur?

How could naloxone help?

Areas of confusion
When in particular excess?

- Post-detox/rehab
- During methadone early treatment
- Prison release
Risk of death during and after opiate substitution treatment in primary care: prospective observational study in UK General Practice Research Database

Rosie Cornish, statistician,1 John Macleod, professor in clinical epidemiology and primary care,1 John Strang, professor in the psychiatry of the addictions,2 Peter Vickerman, senior lecturer in mathematical modelling,13 Matt Hickman, professor in public health and epidemiology1

Abstract
Objective To investigate the effect of opiate substitution treatment at the beginning and end of treatment and according to duration of treatment. 
Design Prospective cohort study. 
Setting UK General Practice Research Database. 

INTRODUCTION
Opiate users have a high risk of death and contribute
Risk of death during and after treatment

BMJ 2010;341:c5475
When in particular excess?

- Post-detox/rehab
- During methadone early treatment

Prison release
Post-release ‘carnage’

Seaman Brettle Gore, BMJ, 1998

Bird & Hutchinson, Addiction, 2002

Farrell & Marsden, Addiction, 2008
Prevalence of drug dependence

Drug dependence prior to prison

- M remand: 11% Opiates & stimulants, 8% Opiates only, 12% Stimulants only, 10% Cannabis only
- M sentenced: 9% Opiates & stimulants, 8% Opiates only, 12% Stimulants only, 10% Cannabis only
- F remand: 2% Opiates & stimulants, 11% Opiates only, 17% Stimulants only, 5% Cannabis only
- F sentenced: 5% Opiates & stimulants, 12% Opiates only, 17% Stimulants only, 10% Cannabis only

Substance Misuse in Prisoners 2002 Singleton N, Farrell M, Meltzer H ONS.
Acute risk of drug-related death among newly released prisoners in England and Wales

Michael Farrell & John Marsden
National Addiction Centre, Division of Psychological Medicine and Psychiatry, Institute of Psychiatry, King's College London, UK

ABSTRACT

Aims To investigate drug-related deaths among newly released prisoners in England and Wales. Design Database linkage study. Participants National sample of 48,771 male and female sentenced prisoners released during 1998–2000 with all recorded deaths included to November 2003. Findings There were 442 recorded deaths, of which 261 (59%) were drug-related. In the year following index release, the drug-related mortality rate was 5.2 per 1000 among men and 5.9 per 1000 among women. All-cause mortality in the first and second weeks following release for men was 37 and 26 deaths per 1000 per annum, respectively (95% of which were drug-related). There were 47 and 38 deaths per 1000 per annum, respectively, among women, all of which were drug-related. In the first year after prison release, there were 342 male deaths (45.8 were expected in the general population) and there were 100 female deaths (8.3 expected in the general population). Drug-related deaths were attributed mainly to substance use disorders and drug overdose. Coronial records cited the involvement of opioids in 95% of deaths, benzodiazepines in 20%, cocaine in 14% and tranquilliser antipsychotics in 10%. Drug-related deaths among men were more likely to involve heroin...
Excess mortality ratio for different time periods post-release by cause of death (Singleton, Farrell, Marsden et al 2003)

Excess mortality ratio

Time since release (weeks)

Drug-related deaths
Not drug-related

Up to 1
1 up to 2
2 up to 4
4 up to 8
8 up to 13
13 up to 26
26 up to 52
>=52
Total
structure of today’s talk:
take-away naloxone and overdose deaths

Where is the problem?

When does it occur?

How could naloxone help?

Areas of confusion
Mini-jet naloxone
400 micrograms per 1 ml
net price 1 ml disposable syringe available from Celltech = £5.57
Pre-filled syringe
1 mg per ml, 2 ml syringe
available from: Antigen, Aurum, Mayne £6.30
First mooted:
JS - Keynote on Harm reduction - pushing at the envelope (Melbourne Harm Reduction conference, 1992) (and the linked Heather et al book)

First serious consideration:
First investigated:

Addiction (1999) 94(2), 199–204

RESEARCH REPORT

Preventing opiate overdose fatalities with take-home naloxone: pre-launch study of possible impact and acceptability

JOHN STRANG, BEVERLY POWIS, DAVID BEST, LOUISA VINGOE, PAUL GRIFFITHS, COLIN TAYLOR, SARAH WELCH & MICHAEL GOSSOP
Why are we doing this?

Overdose is the major cause of death among drug users – mainly opiate

Most heroin overdoses are witnessed

Most witnesses intervene actively (often wrongly)

Many family members witness overdose
Naloxone saves lives

"I was with a friend who collapsed. We tried to revive him but the ambulance took 20 minutes to arrive, by which time he had died."

"...when the medics came I told them I had given him the naloxone. The medics said ‘Wow!’ We had probably just saved the guy’s life."

"I used naloxone and it saved his life."

Ambulance
Breathing
Recovery position
Naloxone
Structure – 4 areas

Training elements

(a) how to recognise overdose
(b) how to manage situation – general
(c) how to give naloxone
How to Recognise Opiate Overdose

Person unconscious, and cannot be woken – UNROUSABLE

CYANOSIS – BLUE lips or tongue

Not breathing at all or breathing slowly – deep snoring.

Pin point pupils
**Actions** on Discovering Overdose

A – Ambulance - CALL AMBULANCE

B- Breathing - Check Airway – clear if blocked, Check breathing.

C – reCover - If breathing, place in recovery position – if not breathing, begin basic life support

Administer naloxone
How to inject Naloxone – intramuscular (into muscle)

Remove syringe from box and packet

Attach needle to syringe

Inject into the outer thigh, upper arm or outer part of buttock

Hold needle 90 degree above skin

Insert needle into muscle (needs pressure)

Slowly and Steadily push plunger all the way down

Put syringe back in box. Don’t cover needle
Use the Recovery Position

Lay the victim on their side to stop them from choking on their own vomit

1. Put their right hand by their head (as if they were waving)

2. Put their left arm across the chest, so that the back of the hand rests against the cheek

3. Hold the hand in place and lift up the left knee

4. Turn the victim on their side by pushing down on the knee
Overdose training and take-home naloxone for opiate users: prospective cohort study of impact on knowledge and attitudes and subsequent management of overdoses

John Strang, Victoria Manning, Soraya Mayet, David Best, Emily Titherington, Laura Santana, Elizabeth Offor & Claudia Semmler

National Addiction Centre (Institute of Psychiatry/The Maudsley), Addiction Sciences Building, Denmark Hill, London, UK

ABSTRACT

Aim To examine the impact of training in overdose management and naloxone provision on the knowledge and confidence of current opiate users and to record subsequent management of overdoses that occur during a 3-month
Changes in knowledge after training

***All significant at p<0.001

Clinicians

- risks (7)
- signs (8)
- actions (11)

Clients

- risks (7)
- signs (8)
- actions (11)
Clinician confidence in administering naloxone

![Bar chart showing the percentage of clinicians' confidence levels pre and post-training.](chart.png)
Client confidence in administering naloxone

![Graph showing the level of confidence in administering naloxone before and after training. The graph illustrates a significant increase in confidence after the training.]
Impact of training for healthcare professionals on how to manage an opioid overdose with naloxone: Effective, but dissemination is challenging

Soraya Mayet a, b, *, Victoria Manning b, Anna Williams b, Jessica Loaring b, John Strang b

a Tees, Esk and Wear Valleys NHS Foundation Trust, UK
b National Addiction Centre, Institute of Psychiatry, Kings College London, at King’s Health Partners, UK

ABSTRACT

Background: Opioid overdose has a high mortality, but is often reversible with appropriate overdose management and naloxone (opioid antagonist). Training in these skills has been successfully trialled internationally with opioid users themselves. Healthcare professionals working in substance misuse are in a prime position to deliver overdose prevention training to drug users and may themselves witness opioid overdoses. The best method of training dissemination has not been identified. The study assessed post-training change in clinician knowledge for managing an opioid overdose and administering naloxone, evaluated the ‘cascade method’ for disseminating training, and identified barriers to implementation.

Methods: A repeated-measures design evaluated knowledge pre-and-post training. A sub-set of clinicians were interviewed to identify barriers to implementation. Clinicians from addiction services across England received training. Participants self-completed a structured questionnaire recording overdose knowledge, confidence and barriers to implementation.

Results: One hundred clinicians were trained initially, who trained a further 119 clinicians (n = 219) and...
Fig. 1. Numbers of clinicians/drug users trained by other clinicians on opioid overdose and naloxone administration via the ‘cascade approach’. CDT—community drug team and CJS—Criminal Justice drug service.

were believed to be: caseload issues or clinicians too busy in an already very busy schedule to take time to train clients, assessment directed actions to take following a suspected opioid overdose. The mean composite score was calculated as a useful way of assessing overall adequacy of the training received independently of the caseload.
Providing Training on Overdose Management and Naloxone Administration for Carers and Family Members of Heroin Users

Anna Williams, Kylie Reed, Teodora Groshkova, Jo Cavaciuti, Reuben Cole & Bob Rea
Supervisors: John Strang & John Marsden

Introduction
An effective way of preventing a fatal overdose is training potential witnesses on how to manage an opioid overdose and administer naloxone. Take-home naloxone training among drug users has already proved itself to be beneficial. Carers and Family member are also likely to witness overdoses and could benefit from training (Strang et al., 2008).

Method
A randomized controlled trial was conducted to evaluate the short-term benefits on overdose management-related knowledge and attitudes of an intervention to train family members and carers of opioid users on overdose management and naloxone administration. Family members and carers were randomised to a group-based training intervention or information-only intervention control group. The sample was stratified by personal history of drug use. Both groups were tested before and after receiving the interventions and subsequently followed-up at three months (81.5% of response rate). The sample was recruited through addiction services, open-access needle exchange programmes and community support groups for family members in three regional locations in England. Ethical approval: 08/H0807/90. Trial registration number: ISRCTN76766302

Main Outcome Measurements
- Overdose Knowledge Scale
- Overdose Attitudes Scale
*Instruments developed and validated by Williams, A.; Marsden, J. & Strang, J. (2009)

Experimental Intervention: Group-based
The session would start with an oral presentation on overdose management and naloxone administration. Participants were encouraged to ask questions, comment or share their personal experiences. After the oral presentation, an eight-minute film which dramatized real opioid overdoses stories was shown (“Going Over”). The group was invited to practise the actions to be taken in an overdose situation and how to inject naloxone. The practice session was carried out using the four stage teaching method (Perry & Mackintosh 2007).

Control Intervention: Information-only
The control group received a comprehensive booklet (with a DVD enclosed) which contained information regarding: risk factors for an overdose, methods and overdose, signs of an opioid overdose, actions to take in an overdose situation (importance of calling an ambulance and first aid techniques, such as recovery position and CPR).

Results
Changes in Knowledge and Attitudes total score: between groups and across time
Breathing

Not Breathing Normally

CALL 999
If the person is not responsive

Check Airways and Breathing

Breathing

Put in the recovery position

Not Breathing Normally

Give naloxone
Repeat if no response after 2 minutes

Still Not breathing

Start CPR
Family Members of opioid users

Representative Sample

Baseline Assessment

Intervention

Follow-up 1 - Immediate

Follow-up 2 - Short term

Follow-up 3 - Long term

Follow-up 1 - Control

Follow-up 2 - Effect replication
Results

Changes in Knowledge and Attitudes total score: between groups and across time.

Interaction Effect: $F_{2,320} = 23.78$, $p < .001$

Interaction Effect: $F_{2,320} = 24.33$, $p < .001$
Reliable Change on Knowledge

At immediate follow-up  At 3 months follow-up

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![Graphs showing knowledge changes over baseline knowledge at immediate and 3 months follow-up.](image)
Reliable Change on Attitudes

At immediate follow-up

At 3 months follow-up
Family carers and the prevention of heroin overdose deaths: Unmet training need and overlooked intervention opportunity of resuscitation training and supply of naloxone

JOHN STRANG, VICTORIA MANNING, SORAYA MAYET, EMILY TITHERINGTON, LIZ OFFOR, CLAUDIA SEMMLER, & ANNA WILLIAMS

National Addiction Centre (Institute of Psychiatry/The Maudsley), Denmark Hill, London, UK
Carers – the overlooked intervention workforce

102 carers attending 4 organisations

- 80% parents, 20% other relative/partner
- 96% of opiate users, 87% IDU, 57% in Tx,
- 1/3 used in presence of carer, 47% had past OD
- 20% of carers had witnessed an OD
- 5 had lost user to fatal OD (3 children 2 partners)
- 16% would ‘panic’ or ‘not know what to do’
- 83% expressed an interest OD management & N training

Evidence of potential to extend naloxone...
Target population – user characteristics

Heroin (opiate) user
- Early occasional use
- Current out-of-treatment
- Currently in treatment
- Now abstinent, in recovery
Target audience

Anyone with possibility/probability of being in the house with possible opiate user at time of overdose

(family member; (parent, partner, sib, son/daughter); flatmate etc)
n.b. not just those in treatment
Possible target populations (Training)

- Non-medic drug workers
- Key agency personnel
- Patients
- Carers
- Wider clients (e.g. IEES, etc)
- Users (i.e. not linked to patient status)

Strang, Kelleher et al, BMJ, 2006
Does the naloxone ever get used?

Initial experience ……
Berlin/Jersey – about 10% used within a year
New Mexico, USA – 2/100 within few months
Chicago, USA – 52/550

Dettmer, Saunders and Strang, BMJ, 2001
Baca et al, BMJ, 2001
Bigg, BMJ, 2002
N-ALIVE trial – pilot & main phase

N-ALIVE research trial proposal to test/prove reduced deaths post-release

Pilot – n=5600

Main study – n=56000 (28k + 28k)
Structure of today’s talk: take-away naloxone and overdose deaths

Where is the problem?

When does it occur?

How could naloxone help?

Areas of confusion
Results (Denver ambulance)

43/52 (83%) “IN naloxone responders”

- Avg. time = 3.9 min (range 1-11 min)
Results (Denver …)

“IN naloxone non-responders”

9/52 (17%) “IV only responders”

- Avg. time = 3.7 min (range 1-9 min)
  - 2 pts = noted to have “epistaxis”
  - 1 pt = noted “trauma”
  - 1 pt = noted “septal abnormality”
Final notes

Who can administer naloxone?

To whom can it be given?

What wider future application?
I’m a doctor, not a lawyer

I’m a doctor, working with my patients
Final notes

Who can administer naloxone?

To whom can it be given?

What wider future application?
Who can currently administer N?

Doctors (to patients)

And (recently) now also ...

Nurses under patient group directions
Ambulance paramedics under PGD
Who can currently administer N?

and through Carers ...

to the known named patient

“... acting in accordance with the directions of ...”
Final notes

Who can administer naloxone?

To whom can it be given?

What wider future application?
To whom can naloxone be given?

to patients

However, for use ...

now (i.e. emergency)

possible future (realistic precaution)
Obvious first target populations (take-home naloxone)

patients with treatment-linked risk of overdose

Induction onto methadone
Post-release from prison
Post-detox treatment

......

Final notes

Who can administer naloxone?

To whom can it be given?

What wider future application?
Recent change of law in UK

POM Order (1997)
Addition of naloxone to exempt list

Strang et al BMJ 2006
Possible concerns

Might it increase risk-taking?
Might witnesses be less likely to call ambulance?
Are witnesses sufficiently skilled?
Will the naloxone be immediately available?
Might the ‘victim’ re-overdose later?
What about date-expiry?
Might family be afraid to give injection?
Prescribing Naloxone to Actively Injecting Heroin Users: A Program to Reduce Heroin Overdose Deaths

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Dan Bigg, CRADC
Karen Stanczykiewicz, CADC
Suzanne Carlberg-Racich, MSPH

ABSTRACT. Heroin overdose deaths have increased alarmingly in Chicago over the past decade. Naloxone, an opioid antagonist with no abuse potential, has been used to reverse opiate overdose in emergency medical settings for decades. We describe here a program to educate opiate users in the prevention of opiate overdose and its reversal with intramuscular naloxone. Participant education and naloxone prescription are accomplished within a large comprehensive harm reduction program network. Since institution of the program in January 2001, more than 3,500 10 ml (0.4 mg/ml) vials of naloxone have been prescribed and 319 reports of peer reversals received. The Medical Examiner of Cook County reported a steady increase in heroin overdose deaths since 1991, with a four-fold increase between 1996 and 2000. This trend reversed in 2001, with a 20% decrease in 2001 and 10% decreases in 2002 and 2003. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <http://www.HaworthPress.com> © 2006 by The Haworth Press, Inc. All rights reserved.]
FIGURE 1. Opiate Overdose Deaths in Cook County

Office of the Cook County Medical Examiner
Heroin-related Overdose Deaths in Cook County

1996 - 2007

Source: Cook County Medical Examiner’s Office

Next steps – ‘to do’ list

Improve naloxone (route, device, drug)

Extend to other populations
- Non-medical drug workers (health)
- High-risk population agency staff (hostels)
- Carers
- High risk clients (not in Tx, prison release hostels)

Serious implementation trials
Thank you