Naloxone: Overview, Criminal Justice and other Special Settings

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Goals

1. Overview of naloxone for bystander use
2. High-risk times for overdose mortality
   - Risk of overdose death after release from prisons
   - Acceptability of naloxone among former inmates
3. Targeting naloxone distribution to other high-risk times, populations and settings based on epidemiologic data
Overview of naloxone for bystander use

1. Pop off two yellow caps and one red cap.
2. Screw medicine *gently* into delivery device.
3. Hold spray device and screw it onto the top of the delivery device.
4. Spray half of the medicine up one side of the nose and half up the other side.

Kit for intranasal dispensing
Photo courtesy of A. Walley
Naloxone for bystander administration: Rationale

• Prevent complications of overdose through earlier treatment or when fear of police inhibits calling 911 at all

• Complications include morbidity, high cost health services, death
  ▪ anoxic brain injury
  ▪ aspiration pneumonia
  ▪ hospitalization

• Distributed with education on identifying overdoses, administration, need to call 911, and rescue breathing

• 911 Good Samaritan laws: immunity to bystanders who witness an overdose and call emergency medical services

Wheeler et al., MMWR 2012; Albert et al., Pain Med 2011; Baca et al., Addiction 2005; Wakeman et al., J Addictive Dis., 2009
Evaluations of naloxone distribution programs show promise

1. Feasible
2. Increased knowledge and skills
3. No increase in use
4. Increased drug treatment
5. Reduction in overdose fatalities in some communities

Naloxone as part of comprehensive strategy to reduce overdose

1. Prescription monitoring programs
2. Prescription drug take back events
3. Safe opioid prescribing education
4. Expansion of opioid agonist treatment
5. Safe injection facilities
6. Safe storage of prescription opioids

High-risk times for opioid overdose
International studies suggest high risk of drug related deaths in former inmates

<table>
<thead>
<tr>
<th>Author</th>
<th>Location</th>
<th>Population</th>
<th>RR/SMR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird SM, 2003</td>
<td>Scotland</td>
<td>Male 15-24 y/o released after 14 d incarceration</td>
<td>Drug-related deaths in first 2 weeks compared to other 2 week periods: RR 7.4</td>
</tr>
<tr>
<td>Verger P, 2003</td>
<td>France</td>
<td>Male former prisoners &lt;55 y/o compared with general population</td>
<td>SMR 3.5-10.6</td>
</tr>
<tr>
<td>Hobbs M, 2006</td>
<td>Western Australia</td>
<td>Former prisoners compared with general population</td>
<td>SMR 1.5-4.6</td>
</tr>
</tbody>
</table>

*RR=Relative Risk   SMR=Standardized mortality ratio
Former inmates at high risk for overdose death after release

Study Design
- Retrospective cohort study 1999-2003
- Study being updated for 2004-2009
- Risk factor data from nested case control study (N=868)

Population
- Released inmates from Washington State Department of Corrections (N=30,257)

Data linkage
- National Death Index to establish deaths, causes of death

Comparison data
- CDC Wonder

Binswanger, et al., NEJM 2007
Elevated mortality rates in first 2 weeks after release (N=30,257)

Deaths /100,000 person years

Adj. WA state=223

Binswanger, et al., NEJM, 2007
Leading causes of death after release: 443 deaths

<table>
<thead>
<tr>
<th></th>
<th>No.</th>
<th>Relative Risk*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug overdose*</td>
<td>103</td>
<td>12.2</td>
</tr>
<tr>
<td>CV disease</td>
<td>57</td>
<td>2.1</td>
</tr>
<tr>
<td>Homicide</td>
<td>55</td>
<td>10.4</td>
</tr>
<tr>
<td>Suicide</td>
<td>41</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Compared to other state residents, adjusted for age, sex, and race

*Unintentional poisoning

Binswanger, et al., NEJM, 2007
1999-2003: 103 former inmates died of overdose

Binswanger, et al., NEJM, 2007

*27 deaths had more than one drug involved
Injection drug use is strongest risk factor for overdose death: Preliminary results

Documented history of injection drug use in prison medical and substance abuse charts

- 48% of cases (deaths)
- 34% of controls
- Adjusted odds ratio 7.2 (95% CI 2.9, 18.1) for overdose death

Opioid prescription in prison in 60 days before release not associated with overdose death

The scope of the U.S. criminal justice system

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
<th>Year end population, 2009</th>
<th>“Handled” per year, 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prison</td>
<td>State and Federal, convicted inmates serving &gt;1 year sentence</td>
<td>1.5 million</td>
<td>2.3 million</td>
</tr>
<tr>
<td>Jail</td>
<td>County &amp; city, detention after arrest or serving a sentence of &lt;1 year</td>
<td>0.8 million</td>
<td>13.6 million</td>
</tr>
</tbody>
</table>

Sabol, Bureau of Justice Statistics, 2011
Former jail inmates also at high risk for overdose death, NYC 2001-2005

Lim S. et al., American J Epidemiol, 2012
Acceptability of naloxone among former inmates

Study design

• Prospective cohort study
• 2011-2012

Population

• 200 former prison inmates released from prison in last 7-21 days to Denver area
• Recruited from community sites and correctional programs

### Former inmate characteristics: Preliminary Results

<table>
<thead>
<tr>
<th>Characteristics (N=200)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>25%</td>
</tr>
<tr>
<td>Mean age</td>
<td>41.1</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>38%</td>
</tr>
<tr>
<td>White</td>
<td>34%</td>
</tr>
<tr>
<td>Latino</td>
<td>23%</td>
</tr>
<tr>
<td>American Indian</td>
<td>4%</td>
</tr>
<tr>
<td>Asian</td>
<td>1%</td>
</tr>
<tr>
<td>History of Emergency Dept. visit for overdose</td>
<td>32%</td>
</tr>
<tr>
<td>History of injection drug use</td>
<td>44%</td>
</tr>
<tr>
<td>HIV</td>
<td>10%</td>
</tr>
</tbody>
</table>

Acceptability of naloxone among former inmates: Preliminary Results

<table>
<thead>
<tr>
<th>Interview results (N=200)</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Ever witnessed a heroin overdose, whether the person lived or not</td>
<td>46%</td>
</tr>
<tr>
<td>At last witnessed overdose, someone called 911</td>
<td>54%</td>
</tr>
<tr>
<td>Willing to receive training to use Narcan for a witnessed overdose</td>
<td>86%</td>
</tr>
<tr>
<td>Willing to give Narcan if someone you injected with overdoses</td>
<td>90%</td>
</tr>
<tr>
<td>People leaving jails and prisons should be given Narcan</td>
<td>76%</td>
</tr>
</tbody>
</table>

High risk populations, times and settings: Perspective of former inmates

The last time I OD’d [overdosed] I was on parole. I did too much. I went back to my normal dosage, what I was doing before I went in and that didn’t work… I wound up in intensive care 3 days later from a coma… I know that when you come out of DOC [Department of Corrections] your body is clean so… you need to be careful and know what you’re doing… and you never know what you get.

Binswanger et al., Addiction Science & Clinical Practice, 2012
Current efforts with criminal justice populations

- N-ALIVE trial in United Kingdom
  - Planned RCT to prevent deaths through distribution of naloxone in prison inmates
  - Recruitment not started
  - Implementation of prison naloxone program in Scotland
- Preventing Overdose and Naloxone Intervention (PONI) program in Rhode Island
- Drug Overdose Prevention and Education (DOPE) in San Francisco: Re-entry

Personal communication, Bird, 2012; Yokell et al., Med Health R. 2011; Enteen et al., J Urban Health, 2010
Targeting naloxone distribution to other high-risk times, populations and settings based on epidemiologic data
Targeting naloxone distribution:
High risk times

Transitions from relative abstinence to greater access
  • Release from jail or prison to community settings
  • Discharge from drug treatment or detoxification

Starting treatment with long acting opioids
  • e.g. methadone or buprenorphine
  • For drug treatment or pain management

Cornish R et al. BMJ 2010
Opioid substitution treatment in primary care, UK (N=5577)

Cornish R et al. BMJ 2010
Targeting naloxone distribution: High risk populations

- Criminal justice populations
- Drug treatment clients
- Prior overdose
- Injection drug users
- Homeless/unstable housing
- Difficulty accessing medical care (e.g. rural)
- Prescription opioid users: high dose, opioid naïve, concurrent sedating medications, alcohol users, co-morbid liver, respiratory disease

Targeting naloxone distribution: High risk settings to consider

- Jails, prisons, parole
- Syringe exchange programs
- Community based organizations
- Public health departments
- Homeless shelters/Single room occupancy hotels
- Opioid replacement programs / detoxification centers
- Medical settings (to provide to patients)
- Emergency department
- Primary care settings

Piper et al., Harm Reduction Journal 2007
Naloxone prescriptions by primary care providers?

- Could allow access to some special populations
- Reach people who do not identify as drug users
- Insurance billing may overcome some cost barriers
- Analogous to existing prescriptions by PCPs
  - Epinephrine for individuals with anaphylaxis
  - Glucagon for diabetics
- May encourage physician-patient discussion of risks of overdose
Conclusions

- Former inmates are an appropriate target population for overdose education and increased access to naloxone.
- Naloxone highly acceptable to a high-risk population who would be likely to have it used on them or use it.
- Epidemiologic data can guide the selection of key times, populations, and settings for increased naloxone access.
- Further research is needed to guide implementation of naloxone distribution in appropriate settings.
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   None to disclose

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