Preventing overdose fatalities: The role of naloxone and of supervised injection facilities

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Strategies to address overdose

- Increase access to naloxone
- Good Samaritan laws
- Prescription monitoring programs
- Prescription drug take back events
- Safe opioid prescribing education
- Supervised injection facilities
- Expansion of opioid agonist treatment
Opioid Overdose

Characteristics

- Reduced sensitivity to changes in $O_2$ and $CO_2$ outside of normal ranges
- Decreased tidal volume and respiratory frequency
- Respiratory failure and death due to hypoventilation

Toxidrome Develops Over Minutes to Hours

- Decreased respiratory rate,
- Unresponsiveness
- Blue/gray lips and nails

Opioid receptors are in the respiratory center in the medulla

Naloxone

- Reverses overdose and prevents fatalities
- Mu opioid receptor antagonist
  - No clinical effect in absence of opioid agonists
  - Displaces opioids from receptors
- Takes effect in 2-5 minutes
  - May cause withdrawal
  - Lasts for 30-90 minutes (longer for newest formulation)
- Hepatic metabolism; renal excretion
Formulations
Training Essentials

• What does naloxone do?

• Overdose recognition
  - Sternal rub/grind

• Action
  - Call EMS and administer naloxone

• Recovery position
Training recommendations in most settings

• Risk factors for overdose/overdose death
  – Loss of tolerance
  – Mixing drugs
  – Using alone

• Good Samaritan Law

• Hands on practice with device

• Resuscitation
  – Rescue breathing and/or
  – Chest compressions
Shake and shout
Sternal rub/grind
Call 9-1-1 AND Naloxone

- Tell the 9-1-1 dispatcher, “I think someone has overdosed.”
  - Give the address and location

  AND

- Give the Naloxone
- DO FIRST, whichever is closer at hand
Give naloxone
Give Naloxone (Narcan)

1. Peel
Peel back the package to remove the device. Hold the device with your thumb on the bottom of the plunger and 2 fingers on the nozzle. Do NOT press the plunger.

2. Place
Place and hold the tip of the nozzle in either nostril until your fingers touch the bottom of the person’s nose.

3. Press
Once the tip is in the nostril, press the plunger firmly to release the dose into the person’s nose.

4. Repeat
After 2-3 minutes if there is no or minimal response, repeat with second device into other nostril.
Rescue breathing
or full CPR
or chest compressions
If the person does not respond in 2-3 minutes, give a second dose of naloxone.

Do not wait more than 5 minutes to give a second dose.
After You Give Naloxone

- Explain what happened. Tell them not to take any more drugs because that could cause another overdose.
- Naloxone wears off in 30 to 90 minutes. Stay with the person until they go to the hospital.
- If you do not seek medical care, stay with the person for at least 3 hours.
- Call 911 if the person is not OK when they wake up or take them to the Emergency Room yourself.
Centers for Medicare and Medicaid Services Opioid Misuse Strategy (2016)

- Increase access to naloxone by requiring that the antidote appear on all Medicare Part D plan formularies
- Increase the use and distribution of naloxone for Medicaid beneficiaries
- Increase access to naloxone by requiring that the antidote appear on all Marketplace plan formularies
Evaluations of Overdose Education and Naloxone Distribution Programs

Feasibility
- Piper et al. Subst Use Misuse 2008: 43; 858-70.
- Walley et al. JSAT 2013; 44:241-7. (Methadone and detox programs)

Increased knowledge and skills

No increase in use, increase in drug treatment

Reduction in overdose in communities

Cost-effective
- $438 (best)
- $14,000 (worst ) per quality-adjusted life year gained

Massachusetts case study

Massachusetts compared interrupted time series of towns by enrollment in Opioid Education and Naloxone Distribution programs

- 2912 kits distributed
- 327 rescues, 87% by drug users; 98% effective; EMS revived the other 3

Walley et al BMJ 2013
Community results

• Fatal opioid OD rates compared no implementation
• Program enrollment 1-100 per 100k population (ARR: 0.73)
• Program enrollment >100 per 100,000 (ARR: 0.54)

Walley et al BMJ 2013
Opioid-Related ED Visits by Receipt of Naloxone Prescription Among Primary Care Patients with Chronic Pain

In a population with a rate of opioid-related emergency department visits of 7/100 person-years, prescribing naloxone to 29 patients would avert 1 opioid-related visit in the subsequent year.

Coffin et al Ann Int Med 2016
Special Focuses in New York

Expanding Community Program

Nearly 300 community programs currently active or recently registered: Drug treatment, syringe exchanges, county health departments, hospitals & clinics, universities

Basic Life Support

Permissible scope of practice now includes IN naloxone.

Law enforcement

Frequently first on the scene of an OD - over 4000 uses outside NYC since 5/14

As with police, firefighters are often first on the scene

Pilot in 10 State prison facilities being expanded to others –over 5000 formerly incarcerated individuals carry naloxone

Corrections

Began in August 2015 with changes in Public Health and Education laws

School Settings

Pharmacy dispensing pursuant to standing orders and patient specific orders; co-pay partially eliminated

Pharmacy
What the Research Tells Us:

Risk of death increases substantially after periods of refraining from opioids

Quantities that once brought pleasure or relief can be fatal after a period of abstinence

People leaving prison are particularly vulnerable\(^1,\ 2\)

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A Unique Collaboration in New York

NYS Department of Corrections and Community Supervision, NYS Department of Health and Harm Reduction Coalition are collaborating to:

- Train all soon-to-be-released inmates, regardless of drug involvement, on opioid overdose prevention with naloxone
- Offer kits upon release to those who would like them

Initiated by a DOCCS Superintendent
Design

- Pilot was based on interest of individual facilities, training by interested staff—often correctional officers
- Video filmed in DOCCS as core training
- Offered primarily during last 3 months of incarceration by Transitional Program
- Trainers are now Inmate Program Assistants with backup from Transitional staff
Messaging to inmates

- “Some of you may have a lapse or a relapse; we want you to live to try again”
- “When you leave, you are asked to stay away from drug related settings. But in some places, drugs are so wide spread that this is very hard. You are now equipped to save a life!”
## Numbers from pilot sites

*February 2015- October 2017*

<table>
<thead>
<tr>
<th></th>
<th>Trained</th>
<th>Kits received</th>
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<tbody>
<tr>
<td>Inmates</td>
<td>8780</td>
<td>3802</td>
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<tr>
<td>Staff</td>
<td>3,207</td>
<td>2,281</td>
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<tr>
<td>Families</td>
<td>216</td>
<td>206</td>
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<tr>
<td>Parolees</td>
<td>4,767</td>
<td>1,806</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>16970</strong></td>
<td><strong>8095</strong></td>
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In full rollout at 54 facilities- data pending
Success of Program Attributed to:

Finding an inside advocate
   The inside advocate can provide navigation through the prison system

Training staff first
   Many correctional officers stated they are invested due to high rates of overdoses in their communities.

Staff volunteers to do the training
   Self-selected champions build support among their peers

Vera Institute of Justice soon to publish qualitative evaluation
Naloxone Co-payment Assistance Program

N-CAP
For individuals with prescription coverage as part of their health insurance plan, N-CAP will cover up to $40 in prescription co-payments so there are no or lower out-of-pocket expenses when getting naloxone at a participating pharmacy.

Available with standing orders

Available with patient specific prescriptions

There is no enrollment: co-payment program, not an enrollment program

No coupons are required: Pharmacists will have the billing information at the register.
Opioid-Related ED Visits by Receipt of Naloxone Prescription Among Primary Care Patients with Chronic Pain

In a population with a rate of opioid-related emergency department visits of 7/100 person-years, prescribing naloxone to 29 patients would avert 1 opioid-related visit in the subsequent year.

Coffin et al Ann Int Med 2016
Law Enforcement

Developed By:
NYS Division of Criminal Justice Services
Department of Health, Office of Alcoholism and Substance Use Services
Albany Medical Center and the Harm Reduction Coalition
Early 2014

• Goal: have 5000 officers trained in 8 months
• Method: Regional trainings with a focus on equipping “general topic training” officers to train their units
• The opportunity: integrate other aspect of “drug user health” and public health law into the training
The training

Offered by a law enforcement agent and a medical person

- What is naloxone
- How to recognize a potential opioid overdose
- How to assemble and administer naloxone
- Relevant public health law and interventions
  - Good Samaritan law
  - Syringe exchange/access
  - Community access to naloxone
  - Methadone and buprenorphine
Outcomes

• June 2014- 1/11/18: 4,405 reports of use
• 48% of cases law enforcement was on scene at least 5 minutes before EMS arrived
• Noted to be a team effort
• Frustrated at times with individuals with multiple episodes
• More feedback on successes may help overcome the frustrations
Fact sheets

The New York State Opioid Overdose and Intranasal Naloxone Program for Law Enforcement

In 2014, several agencies in New York State (*) collaborated to develop and deliver a statewide program to train police and other law enforcement officers on how to administer the naloxone they would carry. The first law enforcement trainings began in April 2014. Below are some highlights of the program through April 2017.

- AIDS Institute, Division of Criminal Justice Services, HIV/STD Program, Office of Public Health, and the New York State Department of Health.
- Opioid Overdose and Event Services, Administration for Children and Families, New York State Department of Health.
- The New York State Office of Alcoholism and Substance Abuse Services.

Naloxone Saves Lives

Naloxone, also known as Narcan®, is a prescription medication used to reverse overdoses caused by heroin, prescription pain medications (such as oxycodone, hydrocodone, and morphine), and other opioids.

Naloxone Numbers at a Glance (April 2014 - April 2017)

- NYS counties were represented in trainings: 60
- Law enforcement agencies were trained: 620
- Officers attended one-hour trainings: 10,223
- Officers were certified to train other officers: 3,091
- Officers administered naloxone: 2,036
- NYS counties reported naloxone administration: 60
- Law enforcement agencies submitted usage reports: 232
- Officers administered naloxone: 3,191
- Usage reports have been submitted:
  - 1 dose: 47%
  - 2 doses: 45%
  - 3 doses: 8%

Number of Naloxone Reports (*) Submitted by Law Enforcement Agencies, by County, from 6/1/2014 to 6/30/2017 (n=1,191)

* Law enforcement naloxone reports only; not all naloxone administered

Since the program began, newly trained law enforcement personnel administered naloxone to over 3,000 individuals. Of those who received naloxone, 75% were male and 75% were under 35 years of age. In 75% of cases, police administered naloxone for overdoses in which opioid use was reported or suspected.

Ages of Those Aided (n=3,035)

- Under 25 (77%)
- 26-34 (64%)
- 35-44 (11%)
- 45-54 (3%)
- 55 and above (2%)

Substances Reported for Overdoses (n=3,176)

- Heroin (75%)
- Other Opioid (7%)
- Non-Opioid (6%)
- Unknown (17%)

This Program is Safe and Effective

Officers arrived 6 minutes or more before EMS in 42% of cases. In most cases, they administered either one or two doses of naloxone. Among those aided, 83% experienced no side effects.

Doses Administered Vary (n=1,191)

- 1 dose: 47%
- 2 doses: 45%
- 3 doses: 8%

Post-Naloxone Symptoms (n=2,973)

These are responder observations after administering naloxone. In some cases, they may not be related to the naloxone administration.

5%

91%

Post-Naloxone Symptoms

- None
- Drowsy
- Skid
- Other

- Symptoms are not indicative of use.
- Symptoms are indicative of use.

Differences in Arrival Times Between EMS and Law Enforcement (n=1,231)

- Includes only those cases where law enforcement administered naloxone.
- Same time: 91%
- 1-3 min prior: 14%
- 3-6 min prior: 2%
- 6-12 min prior: 3%
- 12+ min prior: 3%

Trained law enforcement officers throughout New York State are saving lives with the naloxone they carry.
Supervised Injection Facilities

• Supervised injection facilities or drug consumption rooms are facilities where people may go to consume drugs obtained elsewhere in a hygienic environment with appropriate equipment without fear of arrest under trained supervision.

• Primary goals:
  – Provide an environment for safer drug use
  – Improve health status of target group
  – Reduce public disorder

Hedrich, D., T. Kerr & F. Dubois-Arber (2010) 'Chapter 11; Drug consumption facilities in Europe and beyond' European Monitoring Centre for Drugs and Drug Addiction
Supervised Injection Facilities

- Initiated in Switzerland in 1986 now found in 11 countries (Europe, Australia, Canada) with at least 100 sites functioning.
- France opened in 2016, Vancouver BC rapidly expanding site in response to fentanyl

Drug consumption rooms: an overview of provision and evidence EMCDDA 2016
Supervised Injection Facilities

Models

• Supervision
  – Medical - most
  – Non-medical- e.g. Rotterdam

• Site
  – Integrated closely with other services: eg Insite Vancouver
  – Stand alone: Sydney
  – Mobile: Spain, Berlin, Denmark

• Drug consumption rooms – include smoking facilities

• Underground

Hedrich et al; EMCDDA 2016, Kral
Supervised Injection Facilities

• Commonalities:
  – generally created in a setting of concentrated public injection
  – target marginalized people who inject drugs
  – Developed in collaboration with public health, law enforcement and other stakeholders
  – require initial evaluation and registration e.g. age, residency
  – have links or direct contact with other services
  – injection area generally separate from waiting and post injection lounge
Target population

Systematic review finds
• Male;
• 30-35 years of age;
• Experienced frequent housing insecurity and unemployment;
• Had a previous history of incarceration;
• Up to 39% participated in sex work
• High rates of HCV & HIV
• History of nonfatal overdose

Potier C et al. Supervised injection services: what has been demonstrated? A systematic literature review. Drug Alcohol Depend. 2014
Reduction in fatal overdoses

Retrospective population-based study of coroners records before and after establishment of Insite

<table>
<thead>
<tr>
<th></th>
<th>ODs occurring in blocks within 500 m of the SIF*</th>
<th>ODs occurring in blocks farther than 500 m of the SIF*</th>
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<tbody>
<tr>
<td></td>
<td>Pre-SIF</td>
<td>Post-SIF</td>
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<tr>
<td>Number of overdoses</td>
<td>56</td>
<td>33</td>
</tr>
<tr>
<td>Person-years at risk</td>
<td>22 066</td>
<td>19 991</td>
</tr>
<tr>
<td>Overdose rate (95% CI)*</td>
<td>253.8 (187.3-320.3)</td>
<td>165.1 (108.8-221.4)</td>
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<tr>
<td>Rate difference (95% CI)*</td>
<td>88.7 (1.6-175.8); p=0.048</td>
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<td>Percentage reduction (95% CI)</td>
<td>35.0% (0.0%-57.7%)</td>
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Table 2: Overdose mortality rate in Vancouver between Jan 1, 2001, and Dec 31, 2005 (n=290), stratified by proximity to the SIF

Marshal et al Lancet 2011; 377: 1429–37
Overdose prevention

No one strategy is sufficient - focus on proven strategies:

• Opioid agonist treatment
• Naloxone access
• Consider implementing supervised drug consumption settings

Evaluate promising interventions

• Long acting naltrexone
• Prescription drug monitoring programs
• Judicious opioid prescribing