The Opioid Crisis
in 2017

Erin Zerbo, MD
Assistant Professor, Department of Psychiatry
Rutgers New Jersey Medical School
Outline

• Neurobiology of addiction

• Epidemiology of the opioid crisis

• Medication-assisted treatment

• Pain management
Neurobiology of Addiction
Reward Pathway

- Neurons start in the VTA → release DA in the nucleus accumbens
- Baseline: steady DA
- Drugs: burst of DA (pleasure/salience)

DA = dopamine
Effects of Drugs on Dopamine Levels

Adapted from: Di Chiara and Imperato, *Proceedings of the National Academy of Sciences USA*, 1988; courtesy of Nora D Volkow, MD
Effects of Drugs on Dopamine Levels

Amphetamine

Adapted from: Di Chiara and Imperato, Proceedings of the National Academy of Sciences USA, 1988; courtesy of Nora D Volkow, MD
Acute drug effects

- Extra DA release → changes in cell signaling
  - $D1$ DA receptor stimulation →
    - cAMP-dependent protein kinase (PKA) →
    - phosphorylation of CREB →
      - immediate early gene products such as cFos →
      - short-term neuroplastic changes for a few hrs/days

But this does not explain long-lasting behavioral changes
How to explain end-stage addiction?

- Overwhelming desire to obtain drug
- Diminished ability to control drug seeking
- Reduced pleasure from biological rewards

End-stage addiction is mostly about waiting for the police, or someone, to come and bury you in your shame.

David Carr
Transition to addiction

- Repeated use → brain changes that last for days-weeks
  - Long-acting proteins involved
    - $\Delta FosB = \text{transcriptional regulator}$,
      increases AMPA glutamate receptor subunits
- Create new circuits based on glutamate, not dopamine
New circuits created from prefrontal cortex (glutamate)
Circuits Involved In Drug Abuse and Addiction

All of these brain regions must be considered in developing strategies to effectively treat addiction.

NIDA
Circuits Involved In Drug Abuse and Addiction

All of these brain regions must be considered in developing strategies to effectively treat addiction.
And to make matters worse...

Dopamine D2 Receptors are Decreased by Addiction
Addiction

• Chronic drug consumption = decreased DA activity

• So even though you care more about the drug now…
  
  - You don’t get as much pleasure when you actually do it
  
  - You don’t care about things in your everyday life

MRI Scans of Healthy Children and Teens Over Time

Blue = mature state
Opioids
Definitions

- **Opium** = mixture of alkaloids from the poppy plant, *Papaver somniferum*

- **Opioid** = any naturally occurring, semi-synthetic or synthetic compound that binds specifically to opioid receptors; shares the properties of 1 or more of the naturally occurring endogenous opioids

- **Opiate** = any naturally occurring opioid derived from opium
Endogenous vs Exogenous Opioids
Opioid receptors/ligands

- **µ (mu)** -- endorphin ("endogenous morphine")
  - Addictive liability, euphoria, analgesia, miosis, respiratory depression, reduced GI motility

- **K (kappa)** -- dynorphin
  - Dysphoria, psychedelic effects (salvia divinorum = kappa agonist), analgesia

- **δ (delta)** -- enkephalin
  - Mood/euphoria, analgesia, convulsant effects

- **NOP** -- nociceptin, orphanin FQ
  - Anxiety, depression, appetite, tolerance to µ agonists
Fig. 3-10

Opiate Receptors In The CNS

- Thalamus
- Hypothalamus
- Pituitary glands
- Periventricular nuclei
- Periaqueductal grey
- RAPHE MAGNUS Enkephalin (δ)
- | β - endorphin
- | Morphine
- | Dynorphin (μ)

SPINAL CORD: Dymorphinerge neuron with μ receptors

Presynaptic inhibition of both III and IV fibres by enkephalins

Pain inhibitory complex: enkephalin (δ)
## Classification of Opioids

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Opioid Intoxication

- **Euphoria** experienced as a “rush” of intensely pleasurable feelings

- Reduced psychological pain:
  - Anxiety, depression, anger, paranoid ideation/psychosis

- GI: nausea, vomiting, constipation
- Miosis (pinpoint pupils)
- Respiratory suppression
Opioid Withdrawal

- Dysphoric mood
- Nausea/vomiting
- Muscle aches
- Lacrimation
- Rhinorrhea
- Pupil dilation

- Pilorection
- Sweating
- Diarrhea
- Yawning
- Fever
- Insomnia
SLEEPLESS BABY?
USE LAUDANUM

Also Aids In:
Pain Relief
Yellow Fever
Cardiac Disease
Colds
Dysentery
Excessive Secretions
A (Very) Brief History of Opioids

- Opium used for centuries
- 1800s: morphine isolated, needle/syringe invented
- 1898 = Heroin (Bayer)
- 1914: Harrison Narcotics Tax Act
- 1960s = Methadone maintenance
- 2002 = Buprenorphine (Suboxone, Subutex, etc)
Since that time...
Admissions: 1999
Primary non-heroine opioid admission rates (per 100,000)
Admissions: 2001
Primary non-heroin opioid admission rates (per 100,000)
Admissions: 2003
Primary non-heroin opioid admission rates (per 100,000)
Admissions: 2005
Primary non-heroin opioid admission rates (per 100,000)
Admissions: 2007
Primary non-heroin opioid admission rates (per 100,000)
Admissions: 2009
Primary non-heroin opioid admission rates (per 100,000)
Drug overdose deaths per year 1980 to 2016

(70% involve opioids)

Peak car crash (1972)
Peak HIV (1995)
Peak gun (1993)
Drug overdoses killed more Americans in last 15 years than WWII, Korean, and Vietnam wars combined

Atlanta, GA, March 31, 2016 – At the 5th National Rx Drug Abuse & Heroin Summit, which ends today, Dr. Tom Frieden, Director of the Centers for Disease Control and Prevention (CDC), yesterday highlighted two startling statistics:

- There have been 500,000 drug overdoses in the United States since 1999 – more casualties than were suffered in WWII, Korean and Vietnam wars combined.
- In 2013, U.S. healthcare providers wrote 249 million opioid prescriptions – enough for every American to have a bottle of opioid pills.
Midlife mortality from “deaths of despair” across countries
Men and women ages 50-54, deaths by drugs, alcohol, and suicide

FIGURE 7
Heroin: Trends in Annual Use, Risk, Disapproval, and Availability
Grades 8, 10, and 12

Use
% who used in last 12 months

Risk*
% seeing "great risk" in using once or twice

PERCENT
20
40
60
80
100
YEAR
74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16

PERCENT
0
10
20
30
40
YEAR
74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16

Monitoring the Future Survey - 2016
FIGURE 7
Heroin: Trends in Annual Use, Risk, Disapproval, and Availability
Grades 8, 10, and 12

Teen use of any illicit drug other than marijuana at new low, same true for alcohol

ANN ARBOR—Teenagers’ use of drugs, alcohol and tobacco declined significantly in 2016 at rates that are at their lowest since the 1990s, a new national study showed.

But University of Michigan researchers cautioned that while these developments are "trending in the right direction," marijuana use still remains high for 12th-graders.
Fentanyl: The New Kid on the Block

Drug seizures containing fentanyl

Source: D.E.A. National Forensic Laboratory Information System

A 2006 spike was traced to a single lab in Mexico

Fentanyl reports doubled in 2016
What about in New Jersey?
More than guns, car accidents, and suicides combined

| 1. Newark                      | 11. Egg Harbor Township       |
| 2. Jersey City                | 12. Plainfield                |
| 3. Paterson                   | 13. Lacey                     |
| 5. Atlantic City              | 15. Middletown                |
| 7. Toms River                 | 17. Old Bridge                |
| 8. Brick                      | 18. East Orange               |
| 9. Trenton                    | 19. Asbury Park               |
| 11. Egg Harbor Township       | 21. Lower Township            |
| 12. Plainfield                | 22. New Brunswick             |
| 13. Lacey                     | 23. Keansburg                 |
| 15. Middletown                | 25. Woodbridge                |

DMHAS, 2013
25 Towns In New Jersey With Heroin Abuse: Treatment Admissions

1. Newark
2. Jersey City
3. Paterson
4. Camden
5. Atlantic City
6. Elizabeth
7. Toms River
8. Brick
9. Trenton
10. Vineland
11. Egg Harbor Township
12. Plainfield
13. Lacey
14. Jackson
15. Middletown
16. Millville
17. Old Bridge
18. East Orange
19. Asbury Park
20. Howell
21. Lower Township
22. New Brunswick
23. Keansburg
24. Edison
25. Woodbridge

DMHAS, 2013
DEA warns of high purity heroin in N.J.

New Jersey has some of the purest heroin in the United States, recent Drug Enforcement Administration lab tests revealed.

The DEA issued an advisory to the public last week, warning of the on average 58 percent purity level of the drug in the state, an increase of 12 percent from 2011, according to the agency. The drug is originating in South America and coming into the state through the seaports in the Newark, Elizabeth and Philadelphia area, international airports and on the interstate highways.
The Cifuentes crime family sends heroin through Ecuador, the Dominican Republic and Mexico into the U.S. on boats, planes and by land.

90% in NJ from Colombia – nj.com
How did we get here?
ADDITION RARE IN PATIENTS TREATED WITH NARCOTICS

To the Editor: Recently, we examined our current files to determine the incidence of narcotic addiction in 39,946 hospitalized medical patients\(^1\) who were monitored consecutively. Although there were 11,882 patients who received at least one narcotic preparation, there were only four cases of reasonably well documented addiction in patients who had no history of addiction. The addiction was considered major in only one instance. The drugs implicated were meperidine in two patients,\(^2\) Percodan in one, and hydromorphone in one. We conclude that despite widespread use of narcotic drugs in hospitals, the development of addiction is rare in medical patients with no history of addiction.

JANE PORTER
HERSHEL JICK, M.D.
Boston Collaborative Drug Surveillance Program
Waltham, MA 02154

The Promotion and Marketing of OxyContin: Commercial Triumph, Public Health Tragedy

Art Van Zee, MD

I focus on issues surrounding the promotion and marketing of controlled drugs and their regulatory oversight. Compared with noncontrolled drugs, controlled drugs, with their potential for abuse and diversion, pose different public health risks when they are overpromoted and highly prescribed. An in-depth analysis of the promotion and marketing of OxyContin (Purdue Pharma, Stamford, CT), a sustained-release oxycodone preparation, illustrates some of the key issues. When Purdue Pharma introduced OxyContin in 1996, it was aggressively marketed and highly promoted. Sales grew from $48 million in 1996 to almost $1.1 billion in 2000. The high availability of OxyContin correlated with increased abuse, diversion, and abuse of the drug compared with other available opioid preparations. The Medical Letter on Drugs and Therapeutics concluded in 2001 that oxycodone offered no advantage over appropriate doses of other potent opioids. Randomized double-blind studies comparing OxyContin given every 12 hours with immediate-release oxycodone given 4 times daily showed comparable efficacy and safety for use with chronic back pain and cancer-related pain. The promotion and marketing of OxyContin occurred during a recent trend in the liberalization of the use of opioids in the treatment of pain, particularly for chronic non-cancer-related pain. Purdue pursued an “aggressive” campaign to promote the use of opioids in general and OxyContin in particular. In 2001 alone, the company spent $200 million in an array of approaches to market and promote OxyContin.
Marketing of OxyContin

- Sales force: risk of addiction “less than 1%”
  - Starter coupon 7-30d supply: 34,000 redeemed nationally

- 1996: 316,000 Rx at $44 million
- 2001 + 2002: 14 million Rx at over $3 billion

- May 2007: Purdue Frederick Co. + 3 company executives: criminal charges of misbranding, $634 million in fines

- Purdue’s own testing in 1995:
  68% of oxycodone extracted from OxyContin when crushed
Secret trove reveals bold ‘crusade’ to make OxyContin a blockbuster

By DAVID ARMSTRONG @DavidArmstrongX / SEPTEMBER 22, 2016
Rates of prescription painkiller sales, deaths and substance abuse treatment admissions (1999-2010)

Sales per kilograms per 10,000 people
Deaths per 100,000 people
Treatment admissions per 10,000 people

CDC 2011
These Drug Dealers Killed More People in the Last Decade than the Mexican Cartels

There is a dubious new addition to the Forbes 2015 America’s Richest Families list. The Sackler family, which owns 100 percent of Purdue Pharma, amassed the 16th largest family fortune in the U.S., estimated to be worth $14 billion dollars.

www.freethoughtproject.com – August 15, 2015
Sources of Prescription Opioids Among Past-Year Non-Medical Users

- Given by a friend or relative for free
- Prescribed by ≥1 physicians
- Stolen from a friend or relative
- Bought from a friend or relative
- Bought from a drug dealer or other stranger
- Other

Number of Days of Past-Year Non-Medical Use

- Any
- 1-29
- 30-99
- 100-199
- 200-365

Percent of Users

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a Obtained from the US National Survey on Drug Use and Health, 2008 through 2011. 

b Estimate is statistically significantly different from that for highest-frequency users (200-365 days) (P<.05).

c Includes written fake prescriptions and those opioids stolen from a physician’s office, clinic, hospital, or pharmacy; purchases on the Internet; and obtained some other way.

The Opioid Epidemic Today

Compton, NEJM, 2016.
Figure 1. Percentage of the Total Heroin-Dependent Sample That Used Heroin or a Prescription Opioid as Their First Opioid of Abuse

Cicero et al 2014: The changing face of heroin use in the U.S. (JAMA)
Annual prescribing rates by overall and high-dosage prescriptions

CDC 2017
How the Heroin Market Has Changed

"Retail" Price Per Pure Gram

So what can be done?
KEEP CALM AND CARRY NALOXONE
Naloxone (Narcan®)

- High-affinity opioid receptor antagonist
- Inactive in absence of opioid
- Part of “coma cocktail” administered to unconscious patients for decades (in ED and by EMTs)
**Agonists and Antagonists**

- **Agonists**: Drugs that occupy receptors and activate them.
- **Antagonists**: Drugs that occupy receptors but do not activate them. Antagonists block receptor activation by agonists.

**Agonist alone**
- Full activation

**Agonist + antagonist**
- Less activation

**Antagonist alone**
- No activation
**WHAT IS NARCAN® NASAL SPRAY**

NARCAN® (naloxone HCl) Nasal Spray is the first and only FDA-approved nasal form of naloxone for the emergency treatment of a known or suspected opioid overdose.

NARCAN® Nasal Spray counteracts the life-threatening effects of opioid overdose. Since most accidental overdoses occur in a home setting, it was developed for first responders, as well as family, friends, and caregivers.

Administer in accordance with the Instructions for Use. Repeated doses may be necessary. NARCAN® Nasal Spray is not a substitute for emergency medical care. Always get help immediately, even if the person wakes up because they may relapse into respiratory depression. The use of NARCAN® may result in symptoms of acute opioid withdrawal.

Please see Indications and Important Safety Information on this page in the use of this product.
Take-home naloxone kit
Naloxone is available without a prescription in 41 states:

AL, AK, AR, AZ, CA, CO, CT, FL, GA, IA, ID, IL, IN, KY, LA, MA, MD, MN, MO, MS, MT, NC, NH, ND, NJ, NM, NV, NY, OH, OR, PA, RI, SC, TN, TX, UT, VA, VT, WA, WI and WV
Save a life with naloxone.

CVS Health™ is dedicated to helping communities address and prevent prescription drug abuse, which is why we’ve worked to increase access to naloxone.

Available without a written prescription in 41 states, naloxone, also known as Narcan, is a safe and effective antidote to opioid overdoses. CVS Pharmacy® locations in most communities have naloxone on hand and can dispense it the same day or ordered for the next business day.

About naloxone

Available as an injection or nasal spray, naloxone works by blocking or reversing the effects of opioids.

Given the rapid rise of opioid overdoses, many state governments have responded by allowing local pharmacies to dispense naloxone without a written prescription. This helps caregivers, concerned loved ones, first responders and patients get naloxone more easily.

We support the opportunity to provide naloxone to those who would benefit from having it on hand during an emergency.

Walgreens Expands Availability of Naloxone without a Prescription to 33 States and Washington D.C.

21 December 2016

DEERFIELD, Ill., December 21, 2016 - As part of its comprehensive national plan to combat drug abuse, Walgreens today announced it has now expanded availability of naloxone, a lifesaving opioid antidote, without requiring a prescription to Mississippi, Missouri and Washington, D.C. That brings the total to 33 states and the District of Columbia where Walgreens makes naloxone available without a prescription.
Heroin users and overdose

• Many studies: >2/3 have witnessed o/d
  • >1/2 have overdosed themselves

• Most o/d in company of others
  • Applying ice or water
  • Painful stimuli
  • Shaking or trying to “walk” the victim
  • Injecting salt and/or milk

• First aid (CPR or rescue breathing) in only minority

• Nearly 100% would like to call 911 – if no risk from police

Chicago Recovery Alliance

Opioid overdose deaths

>20,000 multi-dose vials
>12,000 participants
>1300 successful reversal reports

NDP begun


Counts: 150 200 300 400 500

Data Source: Chicago Recovery Alliance
Ocean + Monmouth Counties: Narcan Pilot Program

• April 2014: Law Enforcement Narcan Program

• Funded by confiscated property from drug dealers

• First month: 10 reversals
  • First reversal 3 days after training
NJ Prescription Monitoring Program

- Mandatory reporting as of March 2015
- Data-sharing with multiple other states
**NJ PMP Aware**

### Patient Report

**Report Prepared:** 10/07/2017  
**Date Range:** 10/07/2016 - 10/07/2017

#### Summary

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<tr>
<th>Prescriptions</th>
<th>Prescribers</th>
<th>Pharmacies</th>
<th>Private Pay</th>
<th>Active Daily MME</th>
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#### Prescriptions

Per CDC guidance, the conversion factors and associated daily morphine milligram equivalents for drugs prescribed as part of medication-assisted treatment for opioid use disorder should not be used to benchmark against dosage thresholds meant for opioids prescribed for pain.

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<td>4 CHIPWOOD LN</td>
<td>NORTH BRUNSWICK</td>
<td>NJ</td>
<td>08902</td>
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<td>ZERBO, MD, ERIN A</td>
<td>183 S ORANGE AVE</td>
<td>NEWARK</td>
<td>NJ</td>
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#### Dispensers

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Medication-Assisted Treatment (MAT)

1) Methadone
   - Federally-regulated methadone maintenance programs (1960s)
   - Decreases overdose deaths, improves psychosocial adjustment, reduces criminal activity, decreases rates of HIV/HCV

2) Buprenorphine
   - Used since 2002
   - DATA 2000 Waiver allows office-based prescriptions

3) Naltrexone (or Vivitrol® injection)
   - Opioid antagonist (blocks receptor)
Buprenorphine: Partial agonist

Opioid receptor activity:

- A full agonist binds to the receptor and activates it by changing its shape, inducing a full receptor response.

- A partial agonist binds to the receptor and activates it with a smaller shape change in the receptor that induces a partial receptor response.

For illustrative purposes only. Theoretical and simplified representation of opioid receptor pharmacology.
How buprenorphine works

1. **Opioid receptor is empty.** As someone becomes tolerant to opioids, they become less sensitive and require more opioids to produce the same effect. Whenever there is an insufficient amount of opioid receptors activated, the patient feels discomfort. This happens in withdrawal.

2. **Opioid receptor filled with a full agonist.** The strong opioid effect of heroin and painkillers can cause euphoria and stop the withdrawal for a period of time (4-24 hours). The brain begins to crave opioids, sometimes to the point of an uncontrollable compulsion (addiction), and the cycle repeats and escalates.

3. **Imperfect fit – Limited opioid effect.** Buprenorphine can bind to both full and partial opioid receptors, providing a slow onset of action and a steady level of pain relief.

4. **Buprenorphine still blocks opioids as it dissipates.** Buprenorphine helps reduce withdrawal symptoms and can be used in conjunction with other treatments to help manage opioid addiction.
Buprenorphine vs Methadone

Buprenorphine has:

- decreased risk of respiratory depression

- relative safety in overdose

- decreased sedation

- more mild withdrawal symptoms (some patients disagree)
Is OMT better?

Methadone Maintenance vs 180-Day Psychosocially Enriched Detoxification for Treatment of Opioid Dependence
A Randomized Controlled Trial

Karen L. Sees, DO
Kevin L. Delucchi, PhD
Carmen Masson, PhD
Amy Rosen, PsyD
H. Westley Clark, MD
Helen Rokhillard, RN, MSN, MA
Peter Banys, MD
Sharon M. Hall, PhD

Context Despite evidence that methadone maintenance treatment (MMT) is effective for opioid dependence, it remains a controversial therapy because of its indefinite provision of a dependence-producing medication.

Objective To compare outcomes of patients with opioid dependence treated with MMT vs an alternative treatment, psychosocially enriched 180-day methadone-assisted detoxification.

Design Randomized controlled trial conducted from May 1995 to April 1999.

Setting Research clinic in an established drug treatment service.

Patients Of 858 volunteers screened, 179 adults with diagnosed opioid dependence were randomized into the study; 154 completed 12 weeks of follow-up.
Results  Methadone maintenance therapy resulted in greater treatment retention (median, 438.5 vs 174.0 days) and lower heroin use rates than did detoxification. Cocaine use was more closely related to study dropout in detoxification than in MMT. Methadone maintenance therapy resulted in a lower rate of drug-related (mean [SD] at 12 months, 2.17 [3.88] vs 3.73 [6.86]) but not sex-related HIV risk behaviors and in a lower severity score for legal status (mean [SD] at 12 months, 0.05 [0.13] vs 0.13 [0.19]). There were no differences between groups in employment or family functioning or alcohol use. In both groups, monthly heroin use rates were 50% or greater, but days of use per month dropped markedly from baseline.

Conclusions  Our results confirm the usefulness of MMT in reducing heroin use and HIV risk behaviors. Illicit opioid use continued in both groups, but frequency was reduced. Results do not provide support for diverting resources from MMT into long-term detoxification.
Mortality risk during and after opioid substitution treatment: systematic review and meta-analysis of cohort studies

Luis Sordo,1,2,3 Gregorio Barrio,4 Maria J Bravo,1,2 B Iciar Indave,1,2 Louisa Degenhardt,5,6 Lucas Wiessing,7 Marica Ferri,7 Roberto Pastor-Barriuso1,2

ABSTRACT

OBJECTIVE
To compare the risk for all cause and overdose mortality in people with opioid dependence during and after substitution treatment with methadone or buprenorphine and to characterise trends in risk of mortality after initiation and cessation of treatment.

DESIGN
Systematic review and meta-analysis.

DATA SOURCES
Medline, Embase, Proquest, and Lilacs to February

out of buprenorphine treatment (2.20, 1.34 to 3.61). In pooled trend analysis, all cause mortality dropped sharply over the first four weeks of methadone treatment and decreased gradually two weeks after leaving treatment. All cause mortality remained stable during induction and remaining time on buprenorphine treatment. Overdose mortality evolved similarly, with pooled overdose mortality rates of 2.6 and 12.7 per 1000 person years in and out of methadone treatment (unadjusted out-to-in rate ratio 4.80, 2.90 to 7.96) and 1.4 and 4.6 in and out of buprenorphine treatment.
WHAT IS ALREADY KNOWN ON THIS TOPIC

Opioid substitution treatment is effective in suppressing illicit opioid use and reducing all cause and overdose mortality.

Growing evidence suggests that mortality during and after opioid substitution treatment is time varying and differs by type of drug.

WHAT THIS STUDY ADDS

In patients using methadone maintenance treatment there are, on average, 25 fewer deaths/1000 person years than in patients who discontinue it. Mortality risk among opioid users during treatment is less than a third of that expected in the absence of opioid substitution treatment.

Buprenorphine maintenance treatment is probably also effective in reducing mortality in opioid users, but quantification of averted deaths requires further studies.

The mortality risk in the induction phase of methadone (first four weeks) is high but seems to decreases substantially during this period, with a further stabilisation at around six deaths/1000 person years in the remaining time in treatment. This did not occur with buprenorphine. The mortality risk in the four weeks immediately after cessation of either treatment is high and could exceed 30 deaths/1000 person years.
ARTICLES

1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden: a randomised, placebo-controlled trial

Johan Kakko, Kerstin Dybrandt Svanborg, Mary Jeanne Kreek, Markus Heilig

Summary

Background The partial opiate-receptor agonist buprenorphine has been suggested for treatment of heroin dependence, but there are few long-term and placebo-controlled studies of its effectiveness. We aimed to assess

Introduction

Heroin dependence is a major cause of morbidity and mortality. In the absence of effective treatment, Swedish heroin addicts have a mortality rate 20-fold to 50-fold higher than their sex and age matched peers who are not dependent on heroin. Abstinence-oriented treatment
Mortality: 4/20 in placebo group, 0/20 in buprenorphine group
Death by Detoxification

By Adam Bisaga, M.D., Maria A. Sullivan, M.D., Ph.D.

Hardly a day passes when we do not hear reports from many different areas of the country about young people dying from overdoses of narcotics. The recent death of the actor Cory Monteith was a stark public reminder of this recurring tragedy. Many of these incidents are even more tragic since they happen not too long after discharge from a treatment program. These headlines are a wake-up call: What more can be done to save the lives of young people with drug addictions, especially those who come to us seeking help?

Monteith was taking heroin, but we know that taking opioid painkillers — such as Vicodin or Oxycontin — affect the brain similarly to heroin and could have resulted in the same tragic outcome. He died of an overdose, a leading cause of death in individuals who use heroin or misuse painkillers. Overdoses, which are most often unintentional, are too common among people who regularly use heroin or misuse painkillers. Drug overdose death rates in the U.S. have more than tripled since 1990. In the past decade, deaths from opioids have surpassed motor vehicles as a cause of death in some states.
Death by Rehabification

By Adam Bisaga, M.D., Maria A. Sullivan, M.D., Ph.D.

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Opioids are different

- **Protracted abstinence syndrome** → high relapse rates
  
  *(we need our endogenous opiates)*

- **Overdose death** most likely after period of abstinence
  - Inpatient rehab
  - Incarceration
    - 129x more likely to die of drug overdose in first 2 wks s/p release from incarceration (Binswanger 2007)
Figure 1. Mortality Rates of MMT Treated and Untreated Heroin Users in Australia (Caplehorn et al. 1996, N = 296)
Figure 2. Drug Poisoning Death Rates During and After Leaving Treatment (Davoli et al. 2007)

- Psychosocial: 74 (Left treatment), 1198 (In treatment)
- Other pharmaceutical: 237 (Left treatment), 1143 (In treatment)
- Methadone Detoxification: 67 (Left treatment), 860 (In treatment)
- Therapeutic Community: 0 (Left treatment), 2158 (In treatment)
- Methadone Maintenance: 122 (Left treatment), 902 (In treatment)
- All Treatments: 98 (Left treatment), 1064 (In treatment)
- All Treatments: Time Out > 30 days: 765 (Left treatment), 2315 (In treatment)
- All Treatments: Time Out <= 30 days: 98 (Left treatment), 1064 (In treatment)

Deaths per 100,000 person years

Naltrexone and Vivitrol®

- Naltrexone is a mu opioid antagonist

- Vivitrol® (Naltrexone XR) is a monthly injection
Vivitrol
380mg IM every 4 weeks
Mean steady-state naltrexone concentration following monthly VIVITROL compared to daily oral dosing

What about our treatment system?
### Table 2.2. Facility operation: Number and percent distribution, 2006-2016

<table>
<thead>
<tr>
<th>Facility operation</th>
<th>Number of facilities</th>
<th>Percent distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>13,771</td>
<td>13,688</td>
</tr>
<tr>
<td>Private non-profit</td>
<td>8,111</td>
<td>7,932</td>
</tr>
<tr>
<td>Private for-profit</td>
<td>3,807</td>
<td>4,015</td>
</tr>
<tr>
<td>Local, county, or community govt.</td>
<td>896</td>
<td>820</td>
</tr>
<tr>
<td>State government</td>
<td>441</td>
<td>427</td>
</tr>
<tr>
<td>Federal government</td>
<td>331</td>
<td>314</td>
</tr>
<tr>
<td>Dept. of Veterans Affairs</td>
<td>186</td>
<td>174</td>
</tr>
<tr>
<td>Dept. of Defense</td>
<td>101</td>
<td>93</td>
</tr>
<tr>
<td>Indian Health Service</td>
<td>42</td>
<td>44</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Tribal government</td>
<td>185</td>
<td>180</td>
</tr>
</tbody>
</table>

* Less than 0.05 percent.

NOTES: Survey reference dates were March 31 for 2006, 2008, 2010, 2014, and 2016 and March 30 for 2012. See Appendix A for changes in the survey base, methods, and instruments that affect analysis of trends over time. Percentages may not sum to 100 percent because of rounding.

SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, National Survey of Substance Abuse Treatment Services (NS-SSATS), 2006-2016.
371 Facilities in NJ in 2016: Pharmacotherapy offered?

SAMHSA: National Survey of Substance Abuse Treatment Services, 2006-2016
KnowAddiction.nj.gov

Hotlines, Helplines and Resources

Prevention Resources

Advocacy

Understanding Addictions

Treatment Resources

Recovery Support Services

Does Not Discriminate...
Treatment Agency

ESSEX COUNTY

AIRMID COUNSELING SERVICES
EXECUTIVE DIRECTOR: RICHARD BARAKA
Phone: (973)678-0550 Email: airmid137@yahoo.com

License by DAS: Yes Type of Organization: Profit
Type of Care and Treatment Services:
Outpatient, Intensive Outpatient, Partial Care/MICA Treatment, Screening, Assessment
Specialized Services/Populations:
Adult, Men, Women, DUI/DWI offenders, Criminal Justice clients
Funding Streams/Special Initiatives:
Medicaid, Private health insurance, Self pay/sliding scale, Work First New Jersey (WFNJ), Drug Court (DC)
Special Language Services:

Participating Initiative Networks:

AMERICAN HABITARE & COUNSELING, INC.
PRESIDENT: ANITA KHAWAJA
Phone: (973)709-0508

137 EVERGREEN PLACE
EAST ORANGE, NJ 07018

687 FRELINGHUYSSEN AVE.
NEWARK, NJ 07114
For those managing pain...
Opioid Agonist Treatment for Patients With Dependence on Prescription Opioids

Suzanne Nielsen, BPharm, PhD; Briony Larance, PhD; Nicholas Lintzeris, MBBS, PhD

CLINICAL QUESTION Are different opioid agonist treatments (eg, methadone vs buprenorphine) associated with differences in efficacy for treating prescription opioid dependence, and is long-term maintenance of opioid agonist treatment associated with differences in efficacy compared with opioid taper or psychological treatments alone?

BOTTOM Line For patients who are dependent on prescription opioids, long-term maintenance of opioid agonists is associated with less prescription opioid use and better adherence to medication and psychological therapies for opioid dependence compared with opioid taper or psychological treatments alone. Methadone maintenance was not associated with differences in therapeutic efficacy compared with buprenorphine maintenance treatment. Evidence quality was low to moderate.
Buprenorphine Course

We are very excited to announce the Fifth Annual Conference on Urban Mental Health at the Department of Psychiatry at Rutgers New Jersey Medical School. This year we are focusing on the Opioid Crisis, which has been devastating for our communities.

- Physicians who attend the conference (and complete an online module) will be certified to prescribe buprenorphine by the end of the day.
- For Advanced Practice Nurses and Physician Assistants, this course will count as 8 hours toward your required 24 hours of training.
- For Residents and Medical Students, this training does not expire and will enable you to get certified for buprenorphine once you are licensed.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 - 8:30</td>
<td>Continental Breakfast and Registration</td>
</tr>
<tr>
<td>8:30 - 8:45</td>
<td>Welcome and Opening Remarks</td>
</tr>
<tr>
<td>8:45 - 9:30</td>
<td>Science: The New Neurobiology of Addiction&lt;br&gt;Dr. Petros Levounis</td>
</tr>
<tr>
<td>9:30 - 10:15</td>
<td>Updates: Opioid Crisis in the US and New Jersey&lt;br&gt;Drs. Emir Zerbo and Zain Khalid</td>
</tr>
<tr>
<td>10:15 - 10:45</td>
<td>Healthy and Not-so-Healthy Snacks</td>
</tr>
<tr>
<td>10:45 - 11:30</td>
<td>Diagnosis: How Do I Know Someone Is Addicted?&lt;br&gt;Dr. Petros Levounis</td>
</tr>
<tr>
<td>11:30 - 12:15</td>
<td>Treatments: How Do I Treat Opioid Addiction?&lt;br&gt;Dr. Emir Zerbo</td>
</tr>
<tr>
<td>12:15 - 1:00</td>
<td>Delicious Lunch and Residents' Poster Symposium</td>
</tr>
<tr>
<td>1:00 - 2:30</td>
<td>Practicum: Working, Living, and Loving Mindfully&lt;br&gt;Drs. Rashi Aggarwal, Bohara Bhaskar, Bara Karadag, &amp; Mayowa Olusumade</td>
</tr>
<tr>
<td>2:30 - 3:00</td>
<td>Open Discussion and Closing Remarks&lt;br&gt;3:00 Evaluations and Adjournment</td>
</tr>
</tbody>
</table>

Friday, November 3, 2017

Registration & Information at: NJMS.Rutgers.edu/Psychiatry

Medical Science Building, Auditorium B, 185 South Orange Avenue, Newark, NJ 07103
Registration, which includes breakfast, snacks, and lunch $95 ($80 for students and trainees)
Thank you

erin.zerbo@rutgers.edu

NJMS.Rutgers.edu/Psychiatry