Opioids, Addiction, and Trends

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July 19, 2018

Overview

1. Opioids
2. Addiction
3. The Epidemic

No Financial Disclosures

Case: Jason

21 yo landscaper admitted December 1 with fever, chills and chest pain.

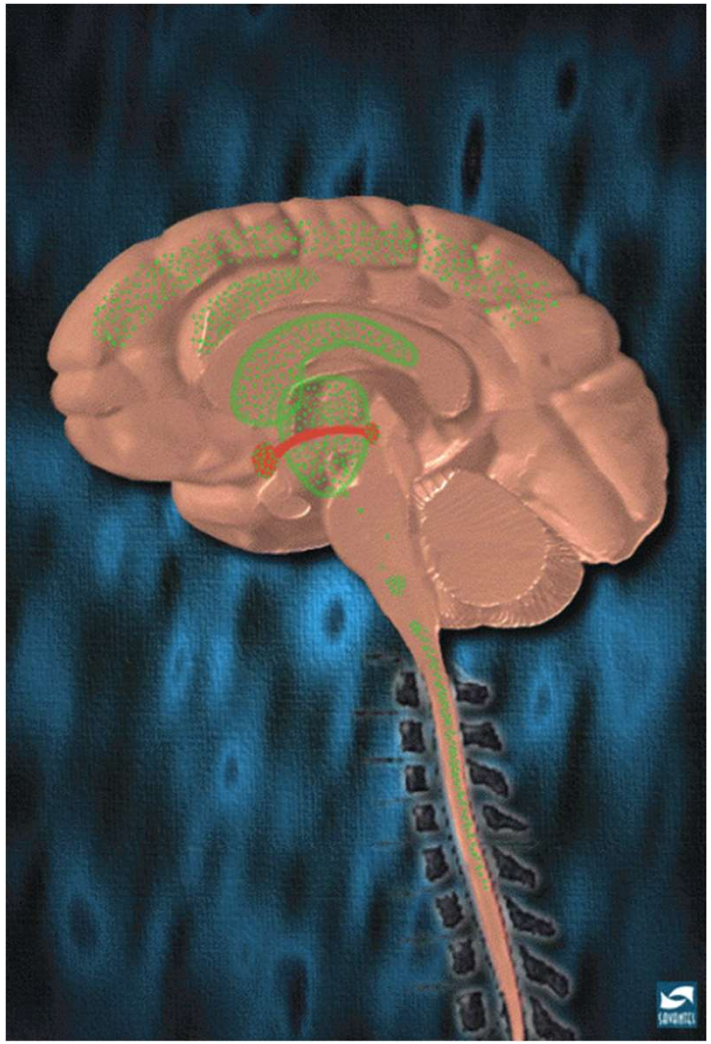
- Blood cultures positive for Staph aureus
- Echocardiogram showed 3 cm vegetation on his tricuspid valve = endocarditis
- IV antibiotics started
- Day 2 of admission a nurse found him injecting heroin in the bathroom

Opioids

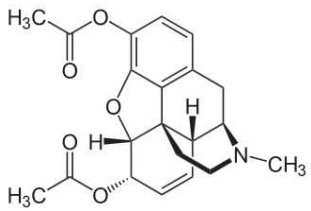
Heroin, morphine, oxycodone, hydrocodone, hydromorphone all interact on the Mu receptor

- Relieve pain
- Euphoria
- Dependence/withdrawal with repeated use
- Addiction

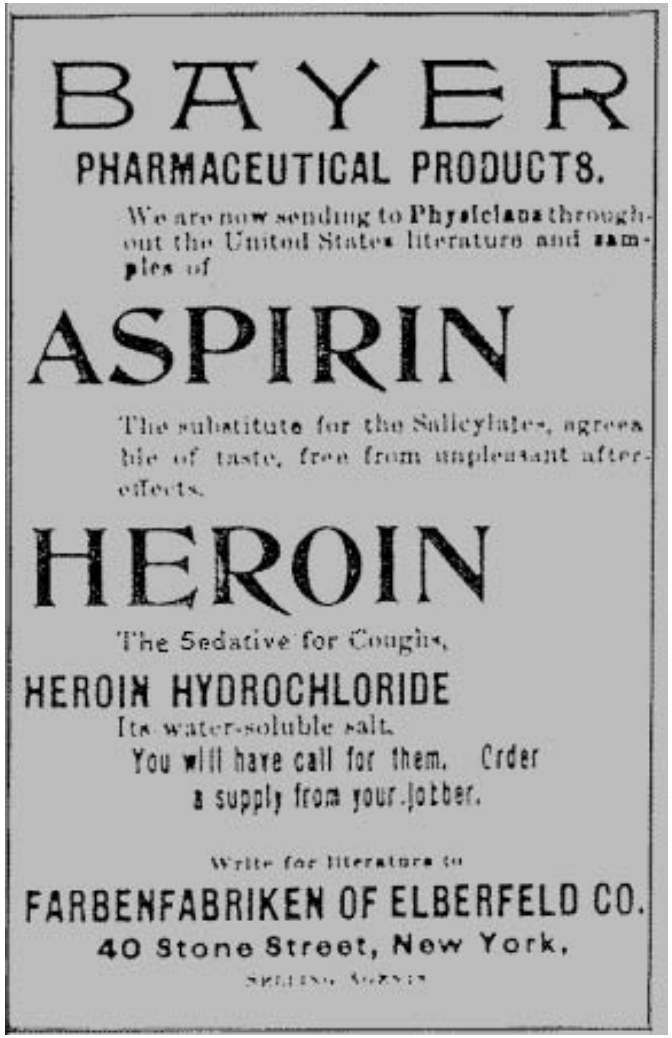
The Opioids



- Interact at Mu, Delta, Kappa Nociceptin and Zeta receptors Brain, Spinal cord, GI, others
- Analgesia, euphoria, sedation
- Suppress presynaptic release of GABA (inhibit the inhibitor)
- Rapid tachyphylaxis
- Neuro sensitization
- Respiratory Depression and apnea
  - —Tolerance develops and lost quickly



Heroin - Diacetylmorphine



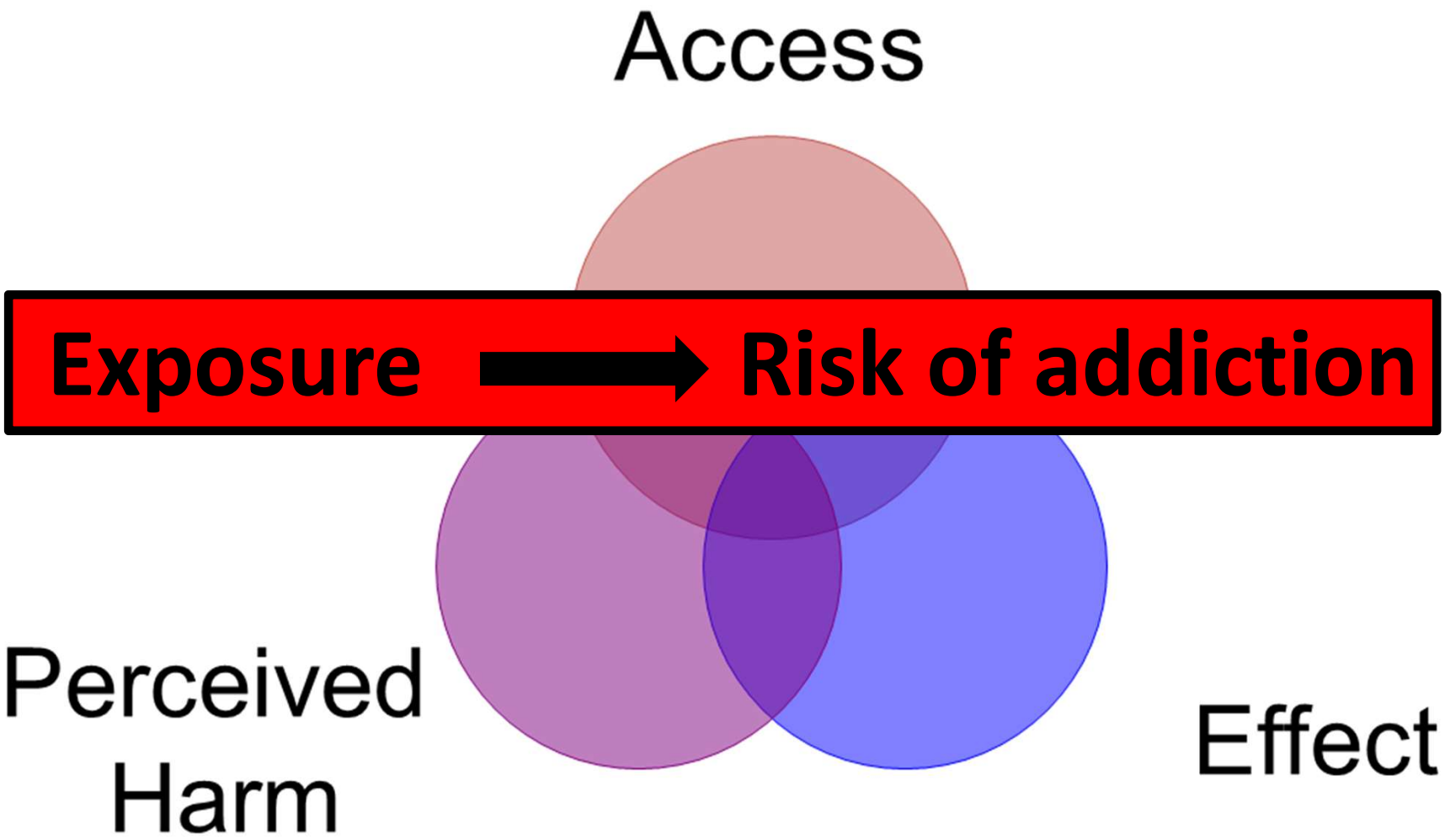
- 1874, C.R. Wright synthesizes diacetylmorphine by boiling anhydrous morphine alkaloid with acetic anhydride searching for non-addictive morphine substitute
- 1898-1913 The Bayer Company produces commercially as a cough suppressant
- Heroisch = hero in German

Heroin

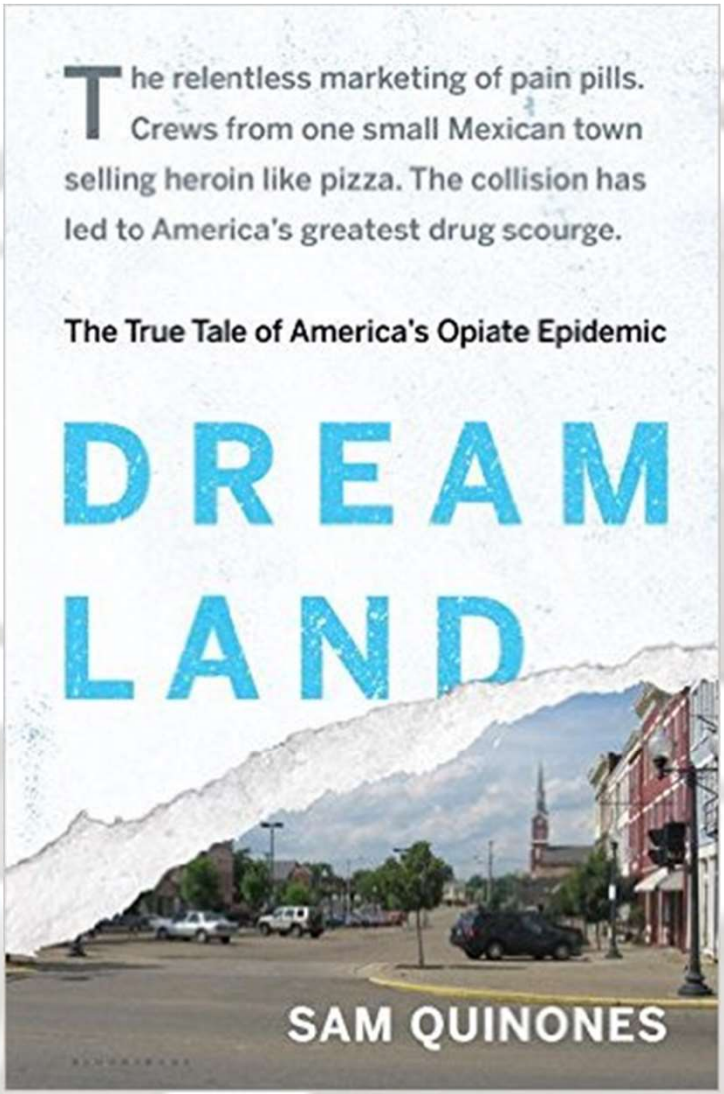
- Powdered Heroin HCl on East Coast (hydrochloride salt) is freely soluble in water
- 2-3x more potent than morphine
- IV, insufflation, smoking, rectal
- Purity varies, dosing varies
- Bundle = 13 bags

- Prodrug for delivery of morphine, more effective crossing blood-brain barrier
- Metabolized into Mu agonists 6-monoacetylmorphine (6-MAM) and morphine in the brain
- Like morphine, large histamine release

Why So Popular?



Prescription Drug Epidemic



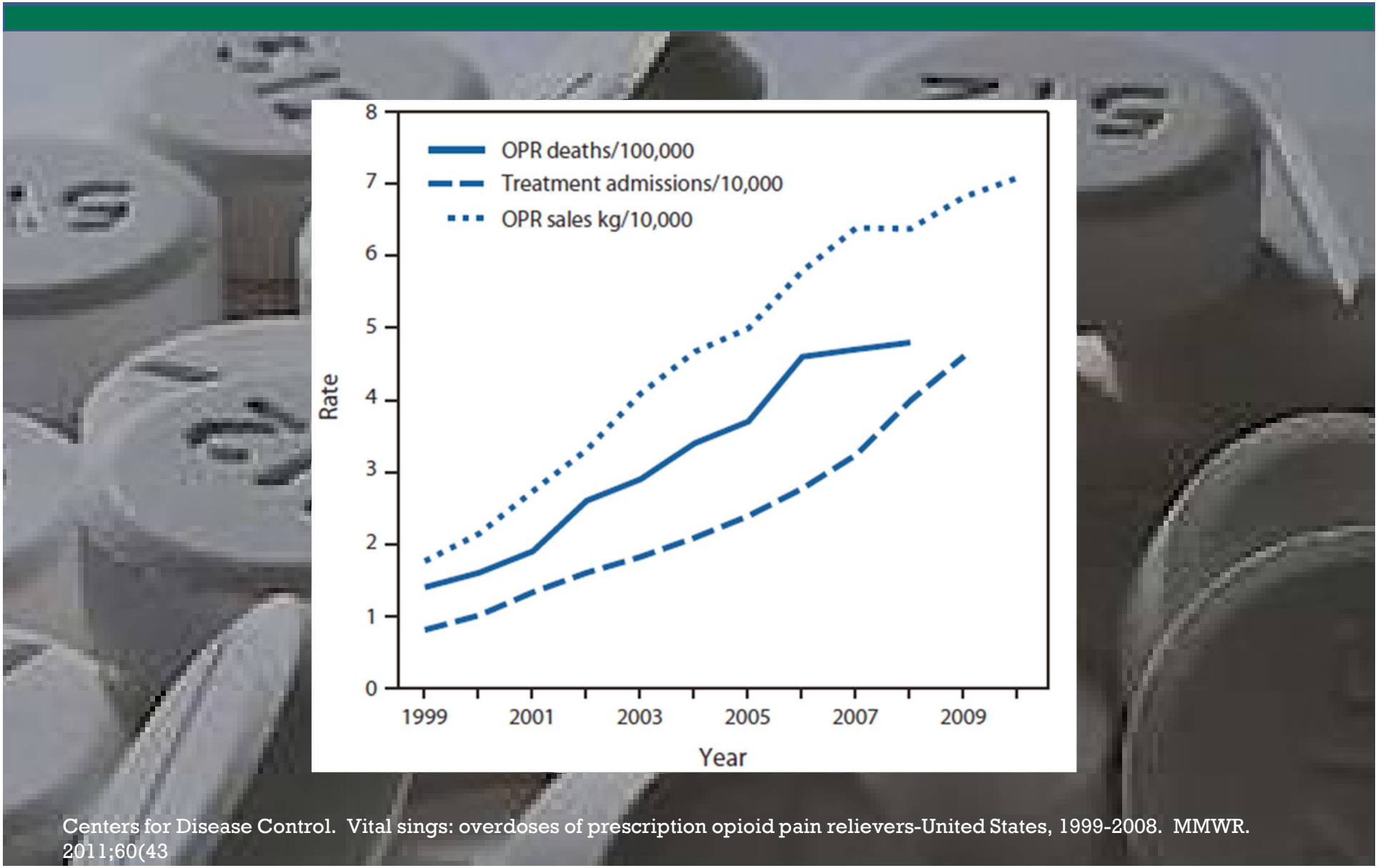
Switching to Heroin

Supply side efforts reduced availability and increased cost of prescription opioids.

- Heroin is cheaper.
- Heroin is easier to get.
- Heroin is easier to inject.
- Heroin is purer than ever.
- Heroin is now more acceptable

Adapted from “Heroin. How did we get here?”
Matthew Ellis, 4th Annual Addiction Medicine Symposia, CCHS, August 30, 2016

Prescription Drug Epidemic



Centers for Disease Control. Vital sings: overdoses of prescription opioid pain relievers-United States, 1999-2008. MMWR. 2011;60(43

Opioid Use Disorder in Young Adults

ARTICLE IN PRESS

AB-04848; No of Pages 6

Addictive Behaviors xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

Addictive Behaviors

journal homepage: www.elsevier.com/locate/addictbeh

Prescription opioid use disorder and heroin use among 12-34 year-olds in the United States from 2002 to 2014

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HIGHLIGHTS

- Trends analyses were done in U.S. nonmedical prescription opioid users.
- From 2002 to 14, opioid disorder increased in NMPO users ages 18-34.
- Trends in heroin use increased significantly in 18-34 NMPO users.
- There was no change in opioid use disorder or heroin use among NMPO users ages 12-17.
- Results call to action to stop these rising trends among NMPO youth.

ARTICLE INFO

Article history:
Received 31 May 2016
Received in revised form 23 August 2016
Accepted 28 August 2016
Available online xxxx

Keywords:
Nonmedical prescription opioid use
Heroin
Prescription opioid disorder
Trend analysis
Youth drug use

1. Introduction

Trend analyses of prescription opioids in the U.S. indicate use, especially use of prescription opioids stronger than morphine, has more than doubled among adults since the early 1990's (Frenk, Porter, & Paulozzi, 2015). Prescription opioids, like Oxycontin®, are effective pharmacological treatments for acute and chronic pain (Fitzcharles & Shir, 2009; Gallagher & Rosenthal, 2008). When used as indicated, these medications can be an important component of pain management. However, their high abuse potential presents concerns regarding their nonmedical use, which can be defined as "use of a prescription opioid that was not prescribed, or taken for the experience or feeling it caused" (SAMHSA, 2014). In the United States, nonmedical use of prescription opioids (NMPO) is increasingly recognized as a serious public health problem among adults (Blanco et al., 2007; Han, Compton, Jones, & Cai, 2015; Huang et al., 2006). Nonmedical prescription drug use, specifically nonmedical use of prescription opioids, is also a growing problem in other countries such as Canada (Fischer, Gooch, Goldman, Kurdyak, & Rehm, 2014; Fischer, Ialomiteanu, Kurdyak, Mann, & Rehm, 2013) and Australia (Degenhardt et al., 2006; Rintoul, Dobbin, Drummer, & Ozanne-Smith, 2011).

Repeated NMPO use increases the risk of developing an opioid use disorder. Studies have shown that adults using prescription opioids as prescribed by a doctor to treat chronic pain are less likely to develop DSM-IV dependence (Minozzi, Amato, & Davoli, 2013) compared to nonmedical opioid users (Compton, Dawson, Goldstein, & Grant, 2013; Huang et al., 2006; Peer et al., 2013; SAMHSA, 2009). Thus, it is important to detect NMPO use early before clinical problems emerge. Nearly 80% of 12–21 year olds who reported initiation of heroin use had previously initiated NMPO between the ages 13–18 (Cerda, Santaella, Marshall, Kim, & Martins, 2015). In general household population samples of past-year NMPO users in the U.S., approximately 7%

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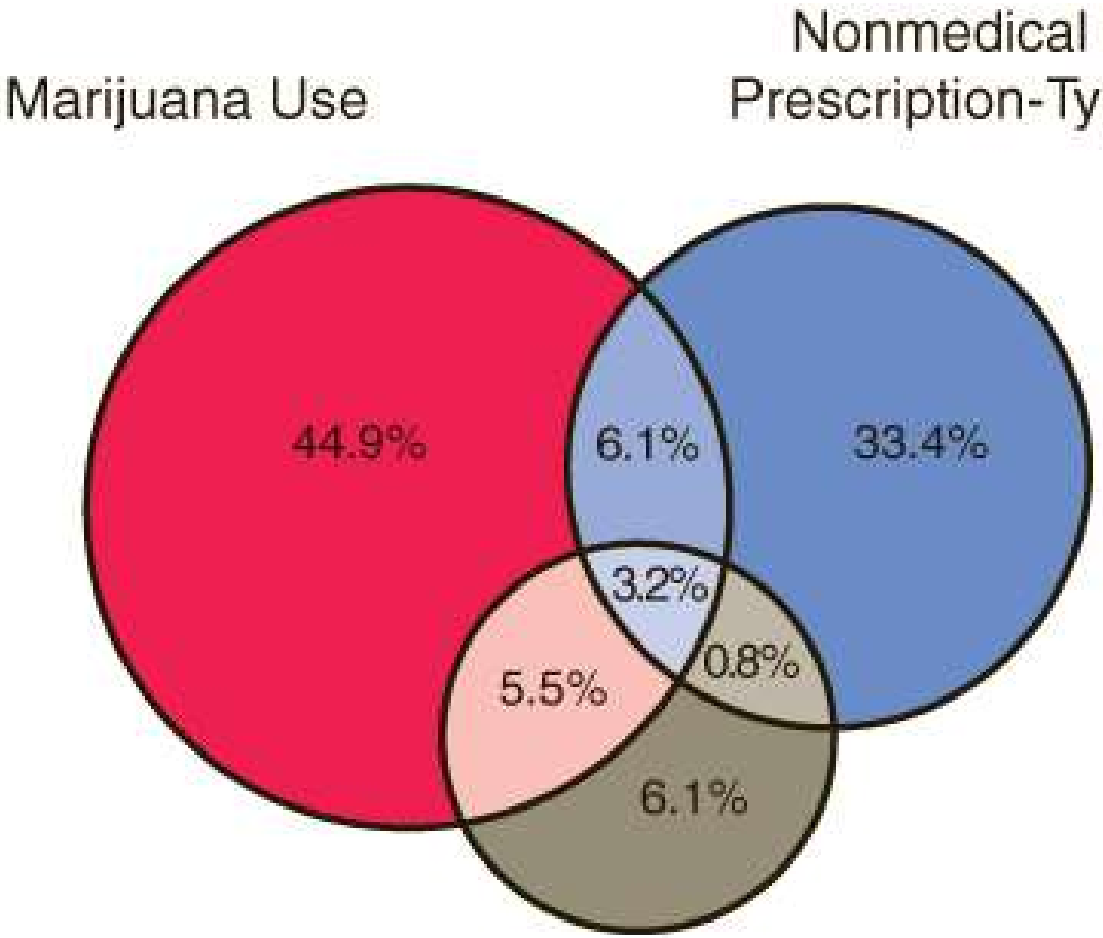
http://dx.doi.org/10.1016/j.addbeh.2016.08.033
0306-4603/

Please cite this article as: Martins, S.S., et al., Prescription opioid use disorder and heroin use among 12-34 year-olds in the United States from 2002 to 2014, Addictive Behaviors (2016), http://dx.doi.org/10.1016/j.addbeh.2016.08.033

2002-14 National Survey on Drug Use and Health

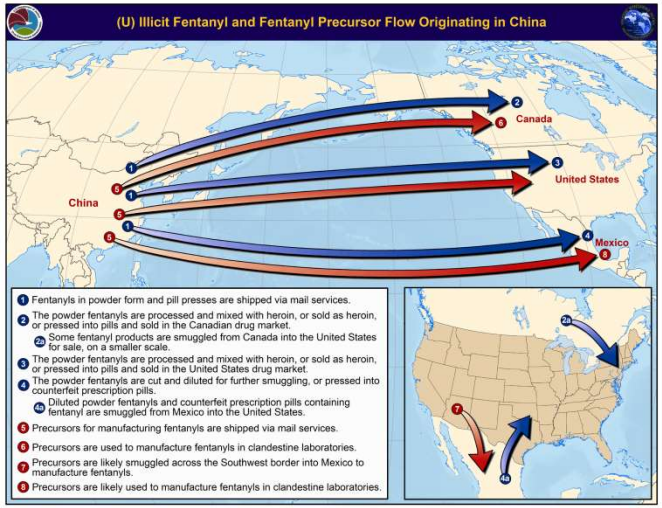
- "Emerging adults **37% increase** in the odds of having an opioid disorder, and young adults doubled their odds from 11% to 24%.
- **4X and 9X increase** over time in the odds of heroin use among emerging adults and young adults who used opioids without a medical prescription"

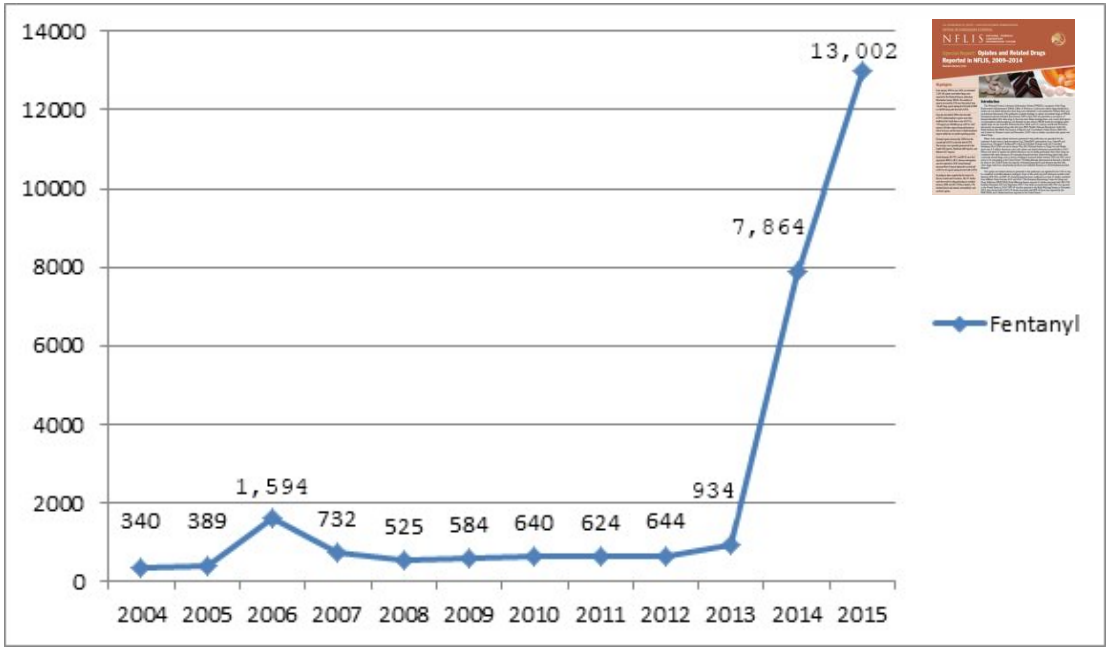
Opioid Use Disorder in >50, 2006-8



Source: 2006-8 SAMHSA National Surveys on Drug Use and Health

Fentanyls - Carfentanil





Counterfeit 30m g Oxycodone Containing Fentanyl.

Counterfeit Oxycodone Containing U-47700.

Carfentanil

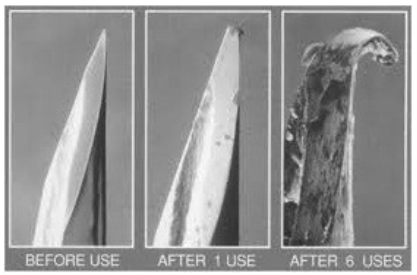
X10,000 more potent than morphine

X100 more potent fentanyl

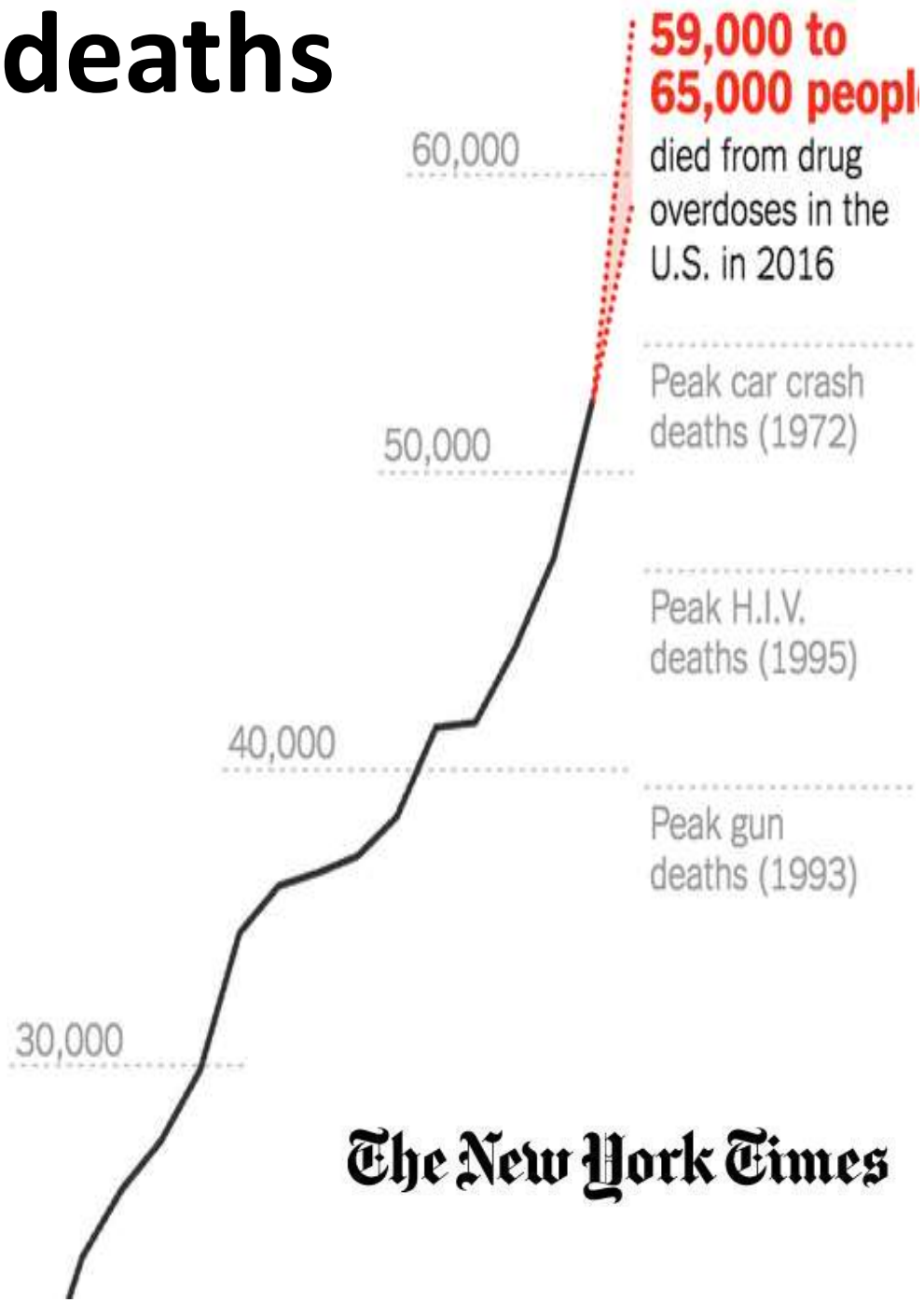
Source: DEA

A Different Kind of Opioid Epidemic

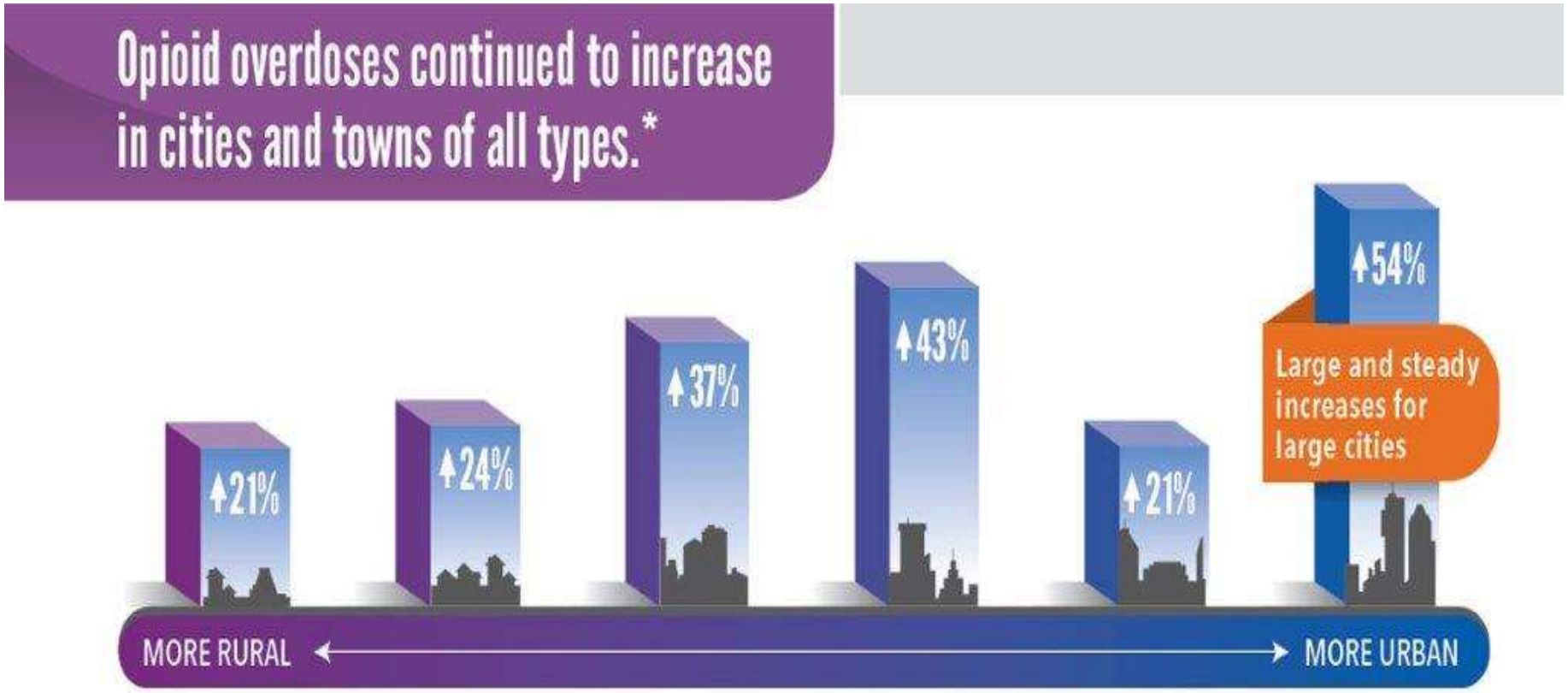
- Previously, heroin use concentrated in poor communities of color, low prevalence
- Current demographics radically different
  - White, young, F=M, urban = rural, frequently employed
  - Initiated with prescription opioids
  - High dosages of heroin
  - **IVDA** instead of inhaled
- Medical sequelae
- Increasing OD/death rate



Drug overdose deaths 1980-2016



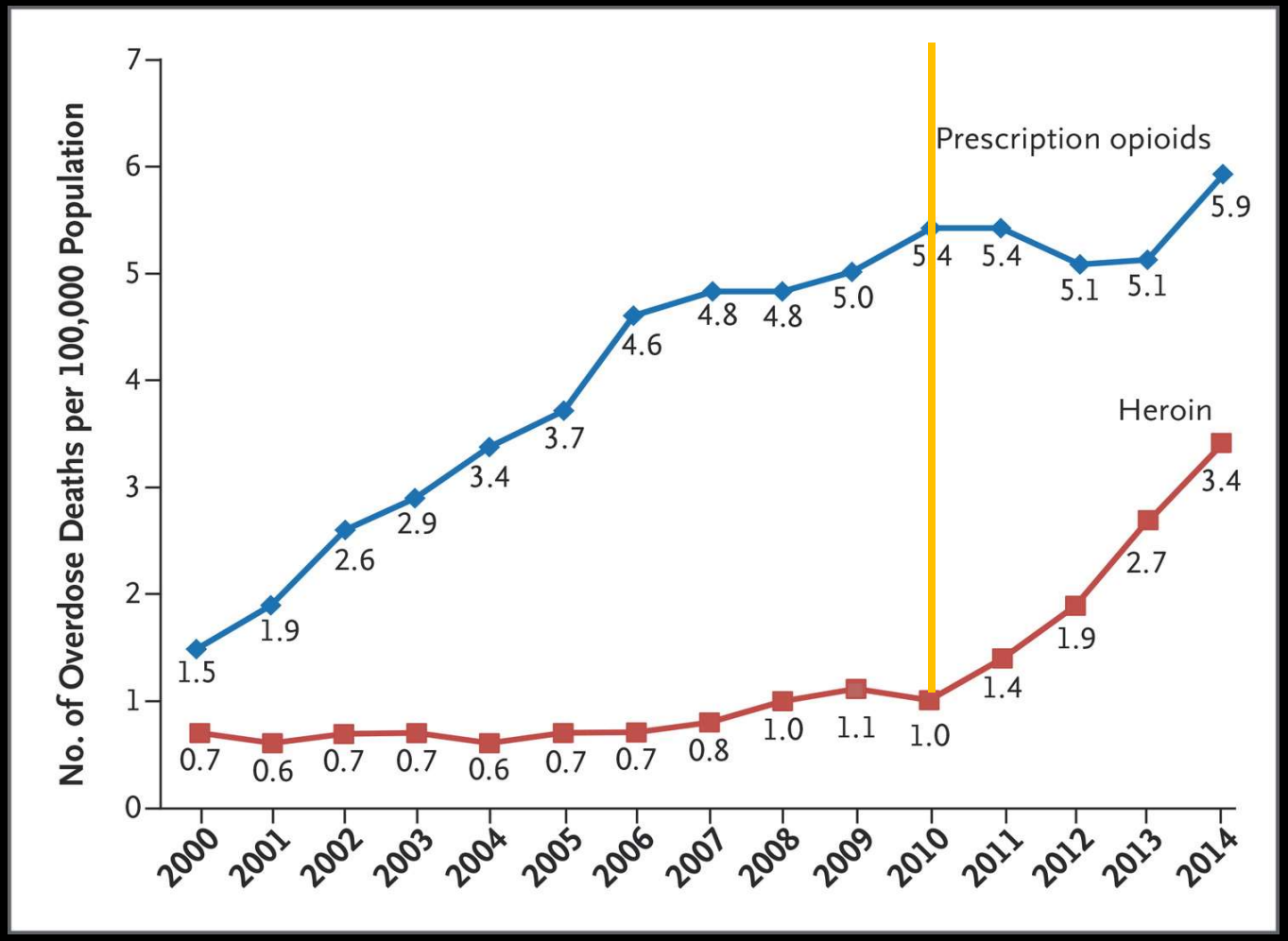
National Overdose Trends 7/16-9/17



SOURCE: CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program, 16 states reporting percent changes from July 2016 through September 2017.

* From left to right, the categories are:
1) non-core (non-metro), 2) micropolitan (non-metro), 3) small metro, 4) medium metro, 5) large fringe metro, 6) large central metro.

Age-Adjusted Rates of Death Related to Prescription Opioids and Heroin Drug Poisoning in the United States, 2000–2014.



Compton WM et al. N Engl J Med 2016;374:154-163.

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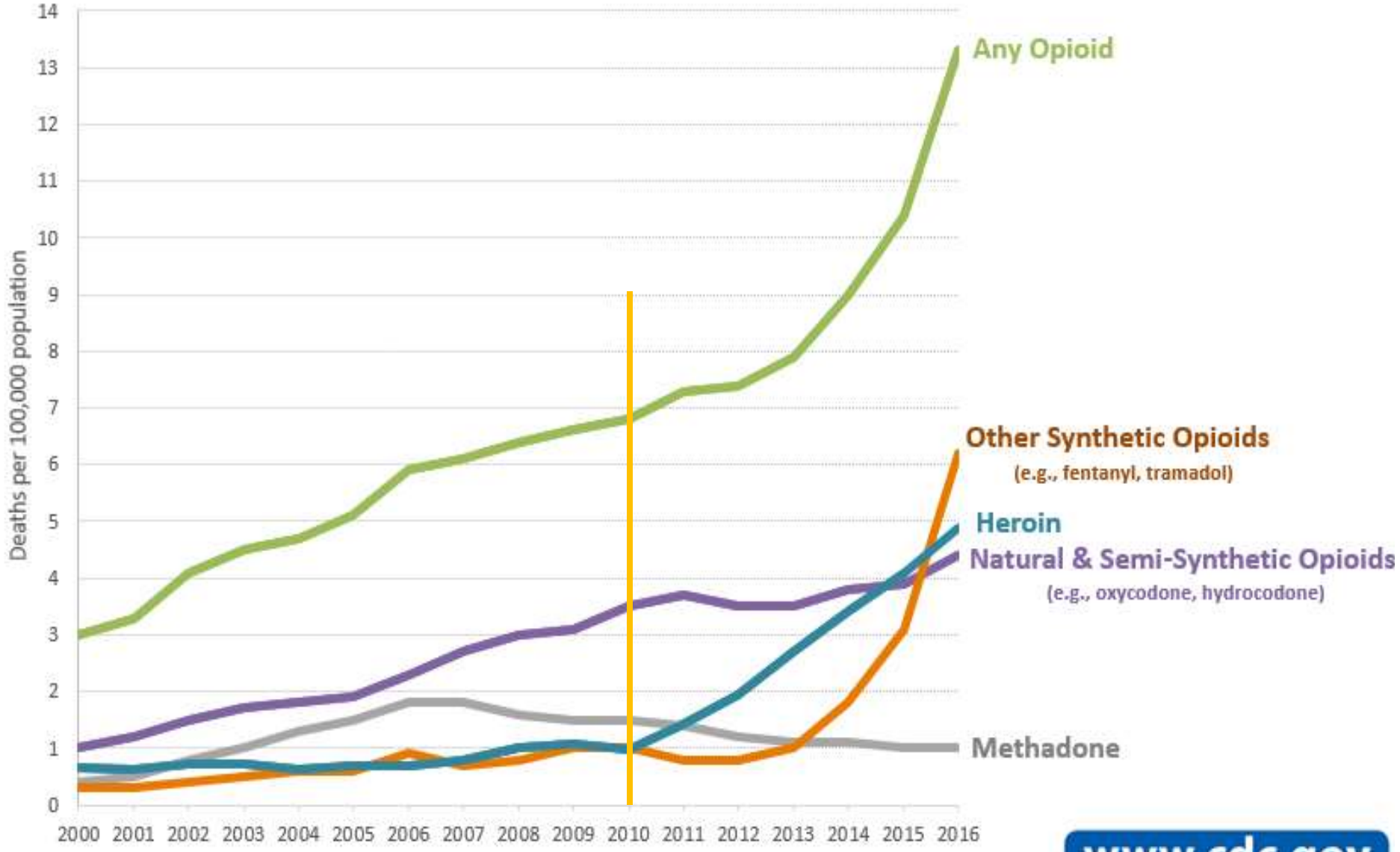
Overdose Deaths Involving Opioids, by Type of Opioid, United States, 2000-2016



SOURCE: CDC/NCHS, National Vital Statistics System, Mortality. CDC WONDER, Atlanta, GA: US Department of Health and Human Ser vices, CDC; 2017. https://wonder.cdc.gov/.

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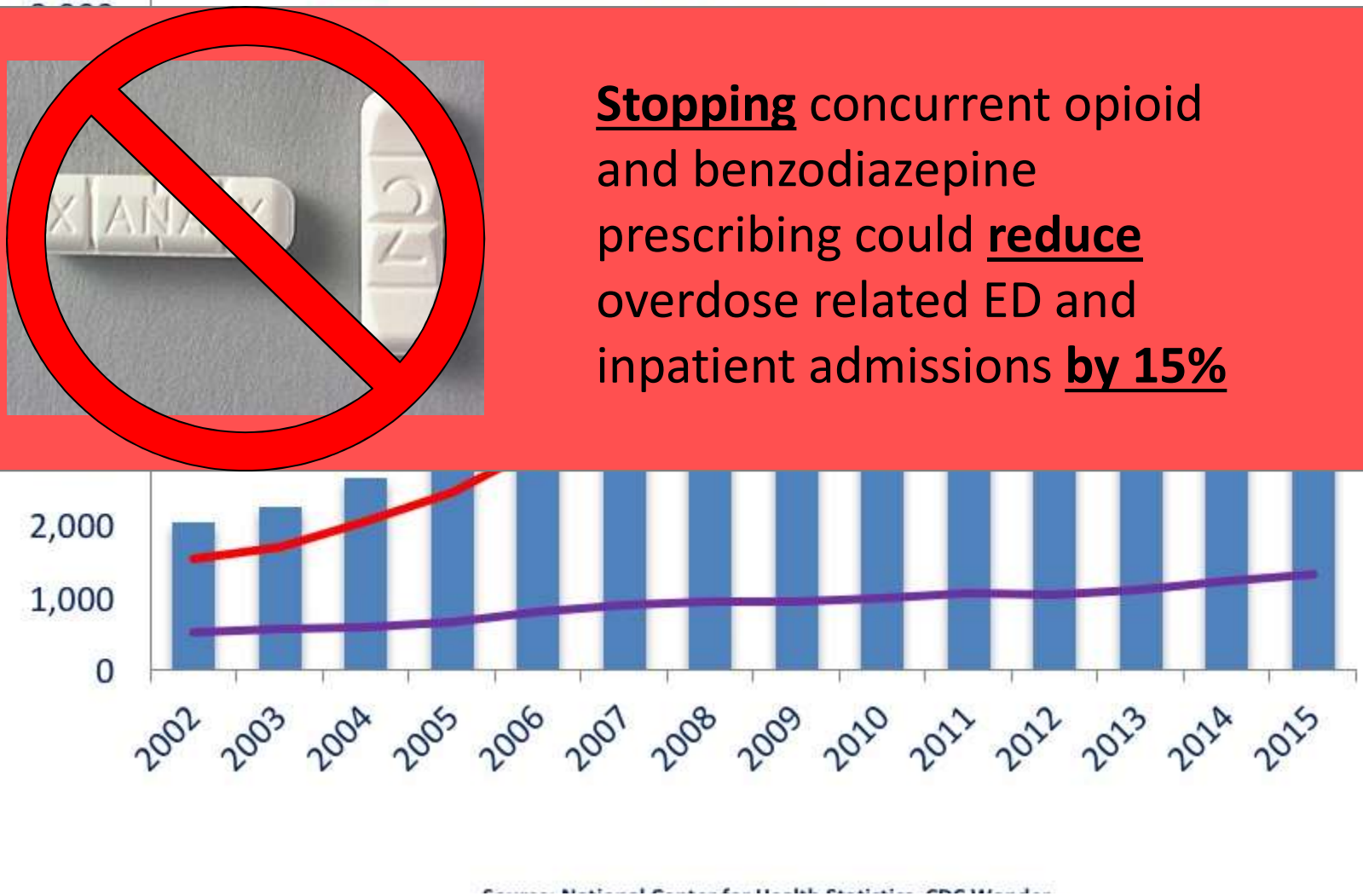
National Institute on Drug Abuse

Opioid involvement in benzodiazepine overdose



<u>Stopping</u> concurrent opioid and benzodiazepine prescribing could **<u>reduce</u>** overdose related ED and inpatient admissions **<u>by 15%</u>**

Tackling the Opioid-Overdose Epidemic

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Perspective

Medication-Assisted Therapies — Tackling the Opioid-Overdose Epidemic

Nora D. Volkow, M.D., Thomas R. Frieden, M.D., M.P.H., Pamela S. Hyde, J.D., and Stephen S. Cha, M.D.
N Engl J Med 2014; 370:2063-2066 | May 29, 2014 | DOI: 10.1056/NEJMp1402780

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Article | References | Citing Articles (174) | Metrics

The rate of death from overdoses of prescription opioids in the United States more than quadrupled between 1999 and 2010 (see graph), far exceeding the combined death toll from cocaine and heroin overdoses.[1] In 2010 alone, prescription opioids were involved in 16,651 overdose deaths, whereas heroin was implicated in 3036. Some 82% of the deaths due to prescription opioids and 92% of those due to heroin were classified as unintentional, with the remainder being attributed predominantly to suicide or "undetermined intent."

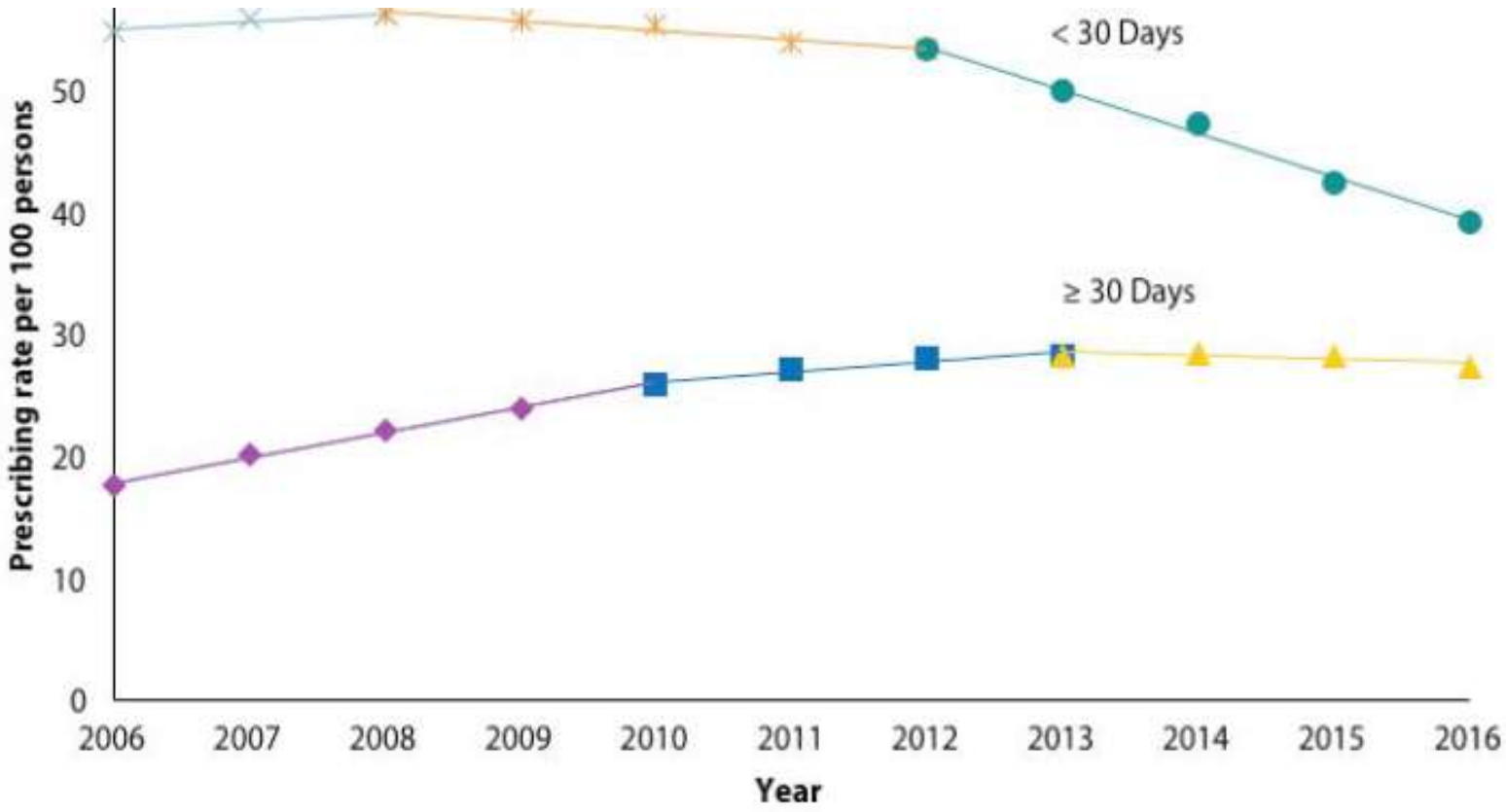
Rates of emergency department visits and substance-abuse treatment admissions related to prescription opioids have also increased markedly. In 2007, prescription-opioid abuse cost insurers an estimated $72.5 billion — a substantial increase over previous years.[2] These health and economic costs are similar to those associated with other chronic diseases such as asthma and HIV infection.

Opioid Sales, Admissions for Opioid-Abuse Treatment, and Deaths Due to Opioid Overdose in the United States, 1999–2010.

1. **Educate** prescribers to prescribe more responsibly and identify symptoms of addiction
2. **Reduce** inappropriate access to opioids
3. **Increase** overdose treatment
4. **Provide** substance-abuse treatment

Progress?

Annual Prescribing rates by days of supply per prescription 2006-16



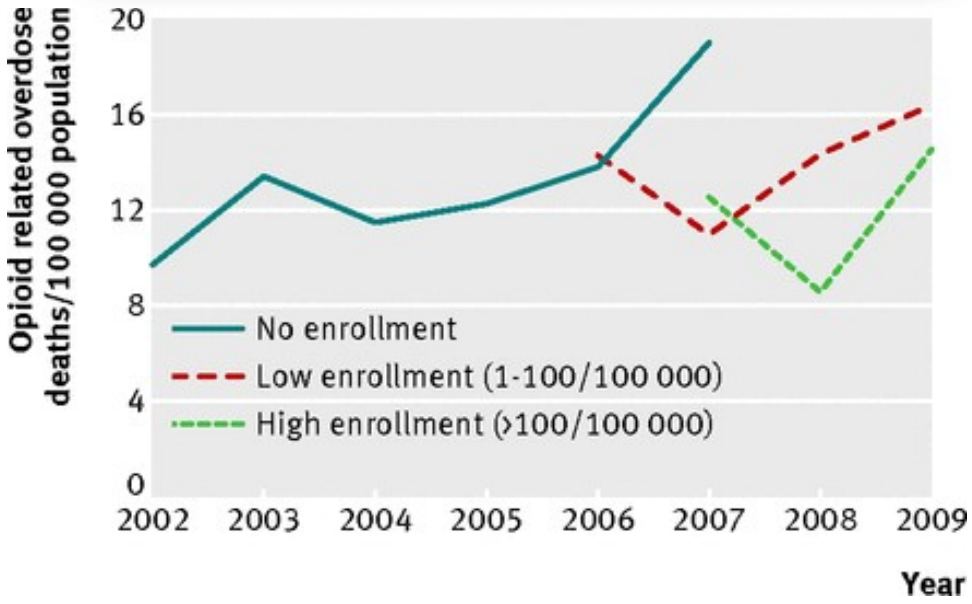
Overall Strategy – Intranasal Narcan

Death rates from opioid overdose were reduced in 19 communities where overdose education and naloxone distribution was implemented

BMJ
Published 31 January 2013
RESEARCH

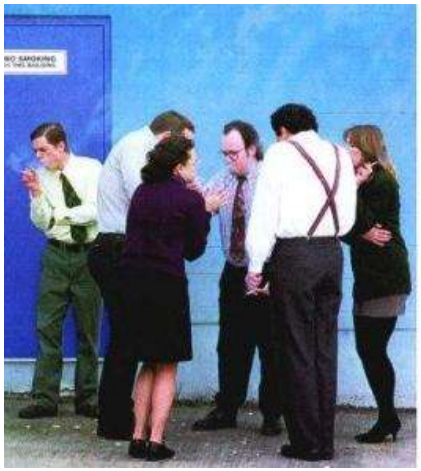
Opioid overdose rates and implementation of overdose education and nasal naloxone distribution in Massachusetts: interrupted time series analysis

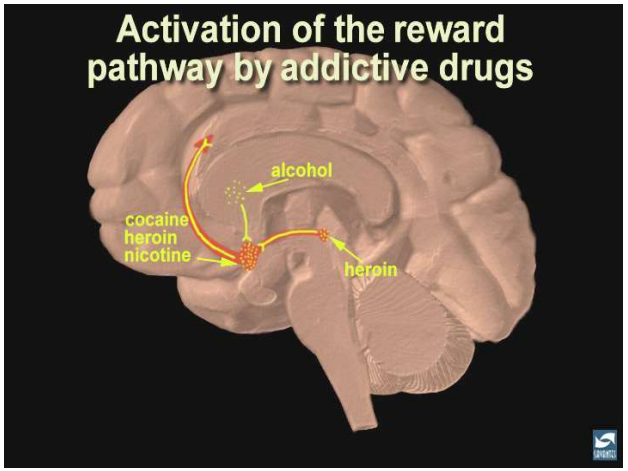
Alexander Y Walley *assistant professor of medicine, medical director of Massachusetts opioid overdose prevention pilot*[1 3], Ziming Xuan *research assistant professor*[2], H Holly Hackman *epidemiologist*[3], Emily Quinn *statistical manager*[4], Maya Doe-Simkins *public health researcher*[1], Amy Sorensen-Alawad *program manager*[1], Sarah Ruiz *assistant director of planning and development*[3], Al Ozonoff *director, design and analysis core*[5 6]

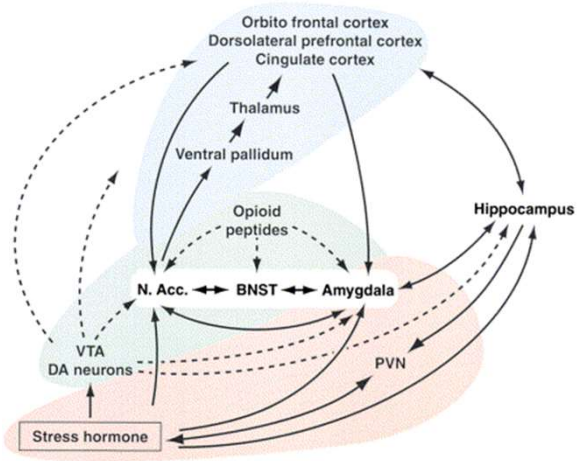


Addiction: an Acquired Brain Disease

- Repeated drug use in vulnerable patients
- Reward and motivational circuits involved
- Compulsive drug seeking, use, and craving despite harmful consequences



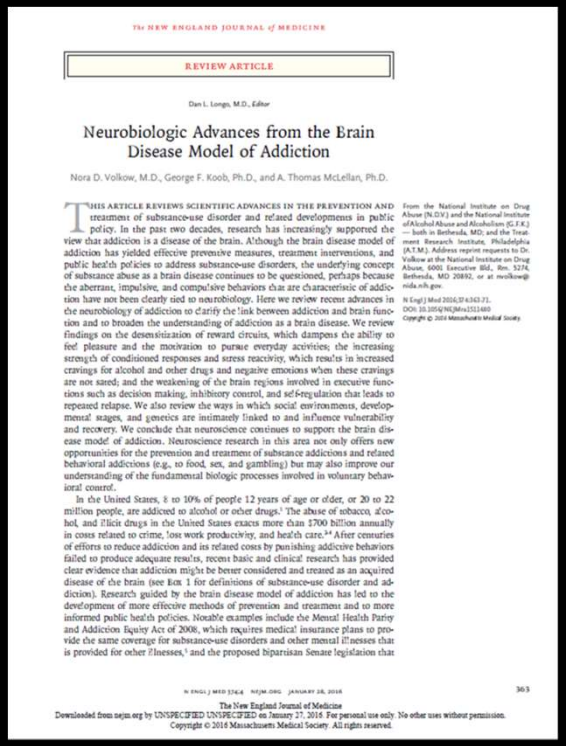


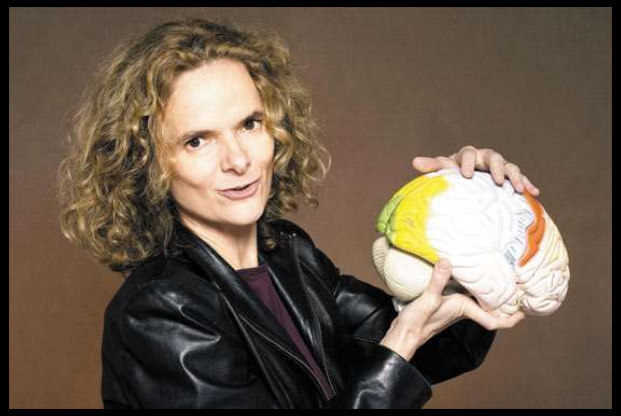


Review Article

Neurobiologic Advances from the Brain Disease Model of Addiction

Nora D. Volkow, M.D., George F. Koob, Ph.D., and A. Thomas McLellan, Ph.D.





Nora Volkow, MD, Director of National Institute on Drug Abuse

N Engl J Med, Volume 374(4):363-371, January 28, 2016

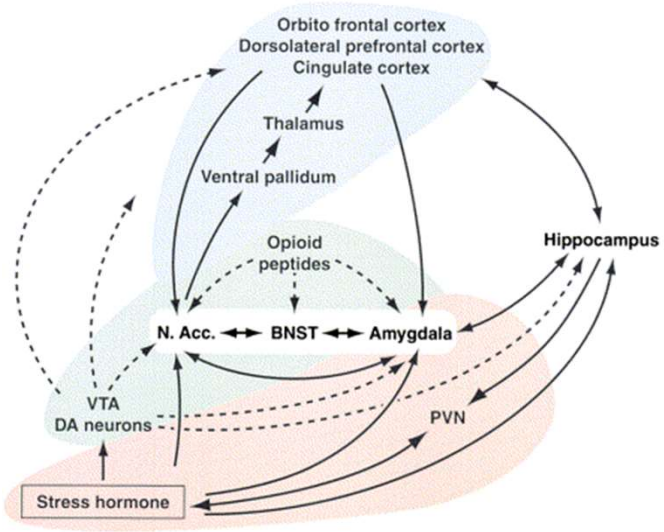
Stages of Opioid Addiction

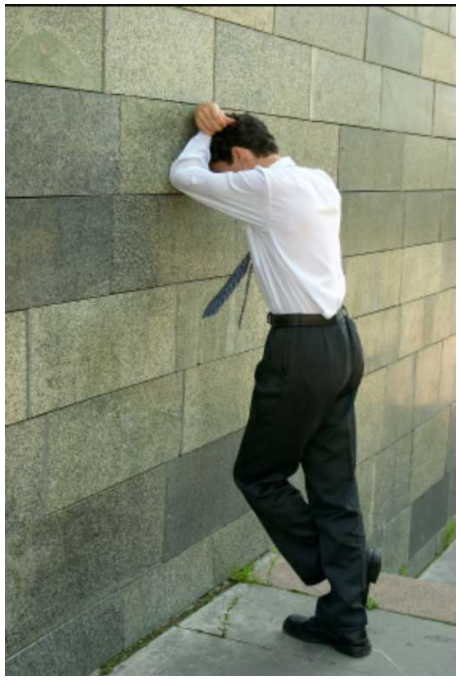
1. **Binge and intoxication**
   - Mesolimbic dopaminergic reward systems mediate reinforcement by increasing DA at the Nucleus Accumbens and VTA. Opiates cause supranormal surges
   - Desensitization of reward system causing reduced pleasure and motivation for usual activities.
2. **Withdrawal and negative affect**
   - Increased strength of conditioned responses and stress reactivity resulting in craving and negative emotional states if craving not satisfied
3. **Preoccupation and Anticipation**
   - Loss of executive function including decision making, self-regulation and inhibition causing relapse

Volkow, NEJM 2016

Opioid Withdrawal

- With dependence, brain mal adapts
- Collection of reproducible symptoms when opioids are removed – PRIMAL MISERY
- Highly motivating

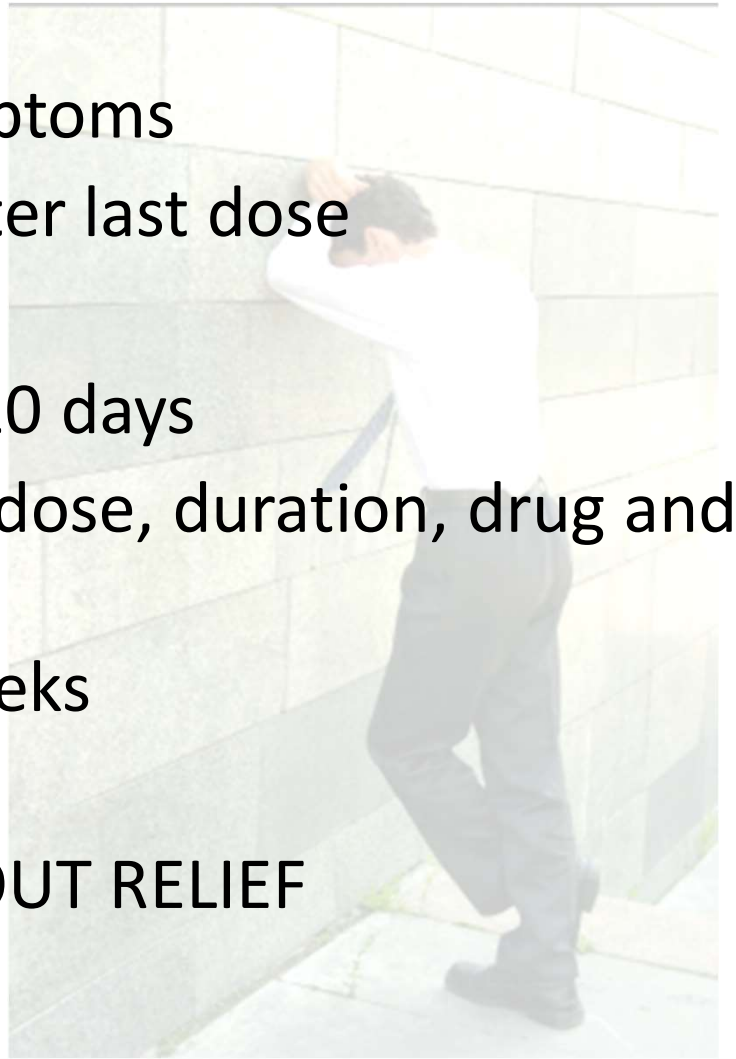




Acute Opioid Withdrawal

- Anticipation can initiate symptoms
- Usually begins 8-12 hours after last dose
- Peak within 36-72 hours
- Generally subside over 7 to 10 days
- Severity associated with the dose, duration, drug and the individual
- Persistent withdrawal for weeks

THE BRAIN IS WIRED TO SEEK OUT RELIEF

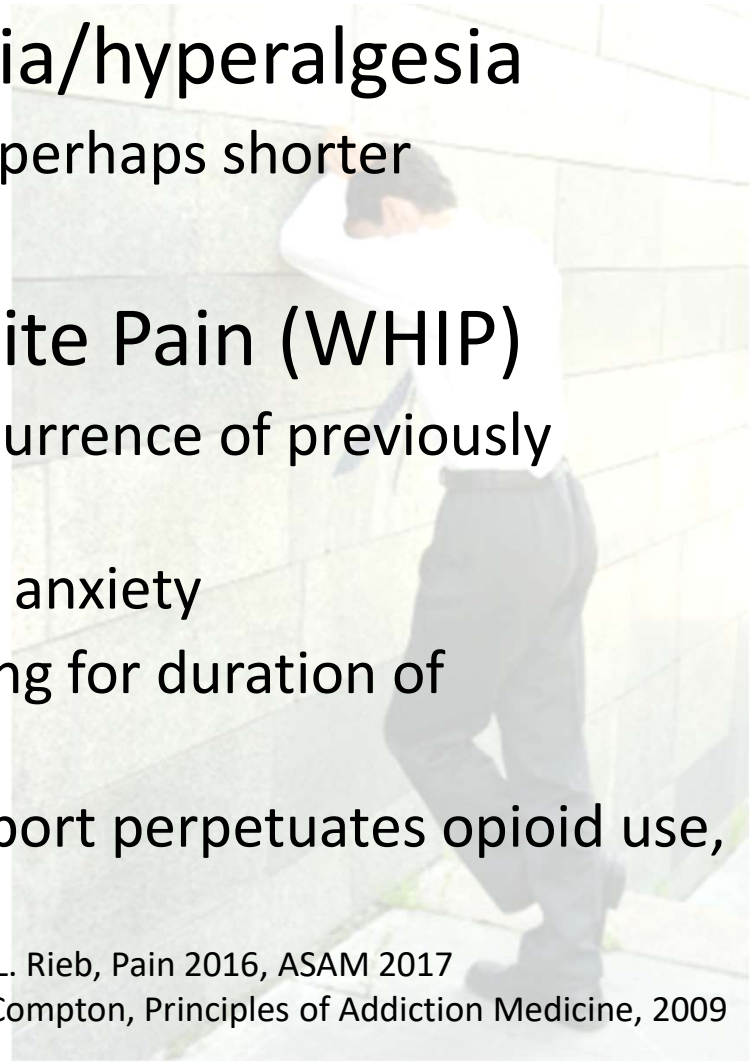


Opioid Withdrawal

Last Dose	Signs and Symptoms	
8 -12 hr	Lacrimation	Yawning
	Dilated Pupils	Rhinorrhea
	Sweating	
12-14	Restless Sleep	
18-20	Dilated Pupils	Restlessness
	Anorexia	Irritability
	Gooseflesh	Anxiety
	Tremors	
48-72	Insomnia	Nausea & Vomiting
	Sneezing	Diarrhea
	Lacrimation	Abdominal Cramping
	Muscle Spasms	Increased Heart Rate
	Body Aches	Increased BP
	Low Back Pain	Chills & Hyperthermia

Withdrawal is Painful

- Opioid use causes analgesia/hyperalgesia
  - Hyperalgesia seen after 5 days, perhaps shorter
  - Episodic withdrawal worsens
- Withdrawal-Assoc Injury Site Pain (WHIP)
  - 40% during withdrawal with recurrence of previously experienced injury pain
  - Physical and/or emotional pain, anxiety
  - More intense than original lasting for duration of withdrawal – average 13 d
  - Exacerbates triggering, most report perpetuates opioid use, avoidance of withdrawal



L. Rieb, Pain 2016, ASAM 2017
Compton, Principles of Addiction Medicine, 2009

Clinical Opiate Withdrawal Scale (COWS)

Flow-sheet for measuring symptoms over a period of time during buprer induction.

For each item, write in the number that best describes the patient's signs or symptom. just the apparent relationship to opiate withdrawal. For example, if heart rate is increa because the patient was jogging just prior to assessment, the increase pulse rate would the score.

Patient's Name:_____ Date: _____

Buprenorphine induction:

Enter scores at time zero, 30min after first dose, 2 h after first dose, etc.

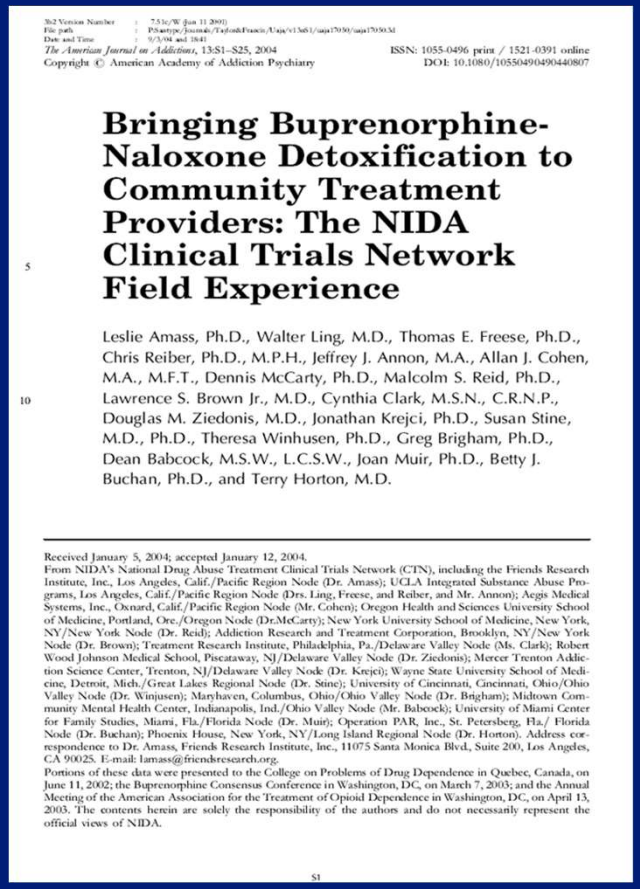
Times: _____ _____ _____ _____

Resting Pulse Rate: (record beats per minute) *Measured after patient is sitting or lying for one minute* 0 pulse rate 80 or below 1 pulse rate 81-100 2 pulse rate 101-120 4 pulse rate greater than 120				
Sweating: *over past ½ hour not accounted for by room temperature or patient activity.* 0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face				
Restlessness *Observation during assessment* 0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 Unable to sit still for more than a few seconds				
Pupil size 0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible				
Bone or Joint aches *If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored* 0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/ muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort				
Runny nose or tearing *Not accounted for by cold symptoms or allergies* 0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks				

GI Upset: *over last ½ hour* 0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 Multiple episodes of diarrhea or vomiting				
Tremor *observation of outstretched hands* 0 No tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching				
Yawning *Observation during assessment* 0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute				
Anxiety or Irritability 0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable anxious 4 patient so irritable or anxious that participation in the assessment is difficult				
Gooseflesh skin 0 skin is smooth 3 piloerrection of skin can be felt or hairs standing up on arms 5 prominent piloerrection				
Total scores **with observer's initials**				

Score:
5-12 = mild;
13-24 = moderate;
25-36 = moderately severe;
more than 36 = severe withdrawal

Treatment : CTN001/2 Results



The American Journal on Addictions, 13:S1–S25, 2004
ISSN: 1055-0496 print / 1521-0391 online
DOI: 10.1080/10550490490440807

Bringing Buprenorphine-Naloxone Detoxification to Community Treatment Providers: The NIDA Clinical Trials Network Field Experience

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Received January 5, 2004; accepted January 12, 2004.
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Portions of these data were presented to the College on Problems of Drug Dependence in Quebec, Canada, on June 11, 2002; the Buprenorphine Consensus Conference in Washington, DC, on March 7, 2003; and the Annual Meeting of the American Association for the Treatment of Opioid Dependence in Washington, DC, on April 13, 2003. The contents herein are solely the responsibility of the authors and do not necessarily represent the official views of NIDA.

Treatment success*

Inpatient bup-nx = **77%**

clonidine = 22%

Outpatient bup-nx = **29%**

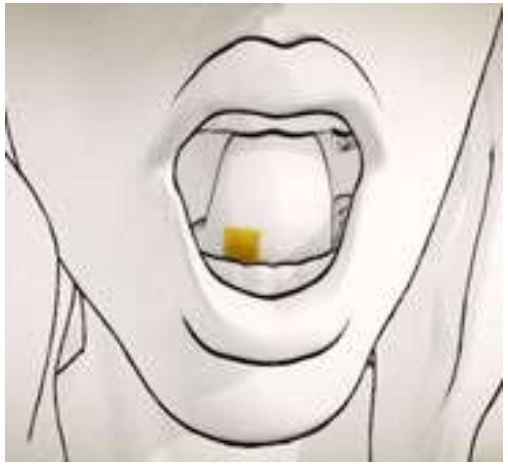
clonidine = 5%

* Completed regimen and negative urine on day 14

Ling etal., Addiction, 2005

Buprenorphine/ Naloxone

- Trade names Suboxone, Zubsolv, Bunavail
- Combination prevents diversion, IVDA
- 2mg /0.5, 4/1, 8/2, 12/3 buccal or sublingual strip

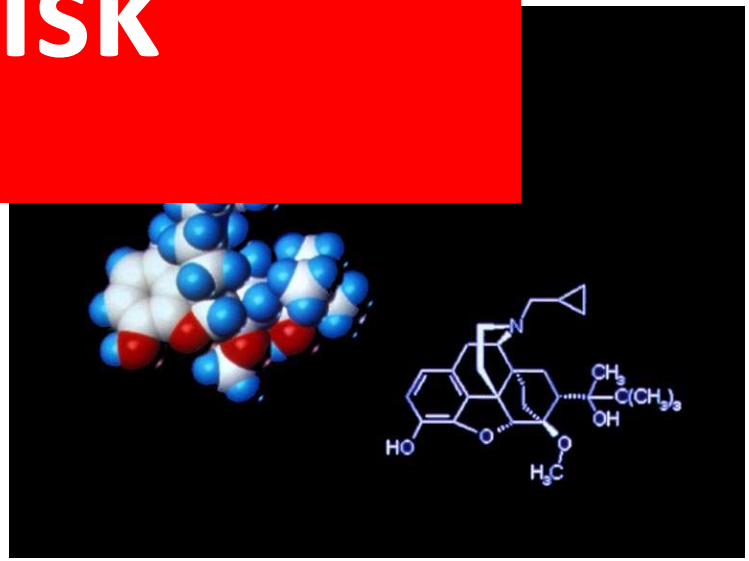


Buprenorphine

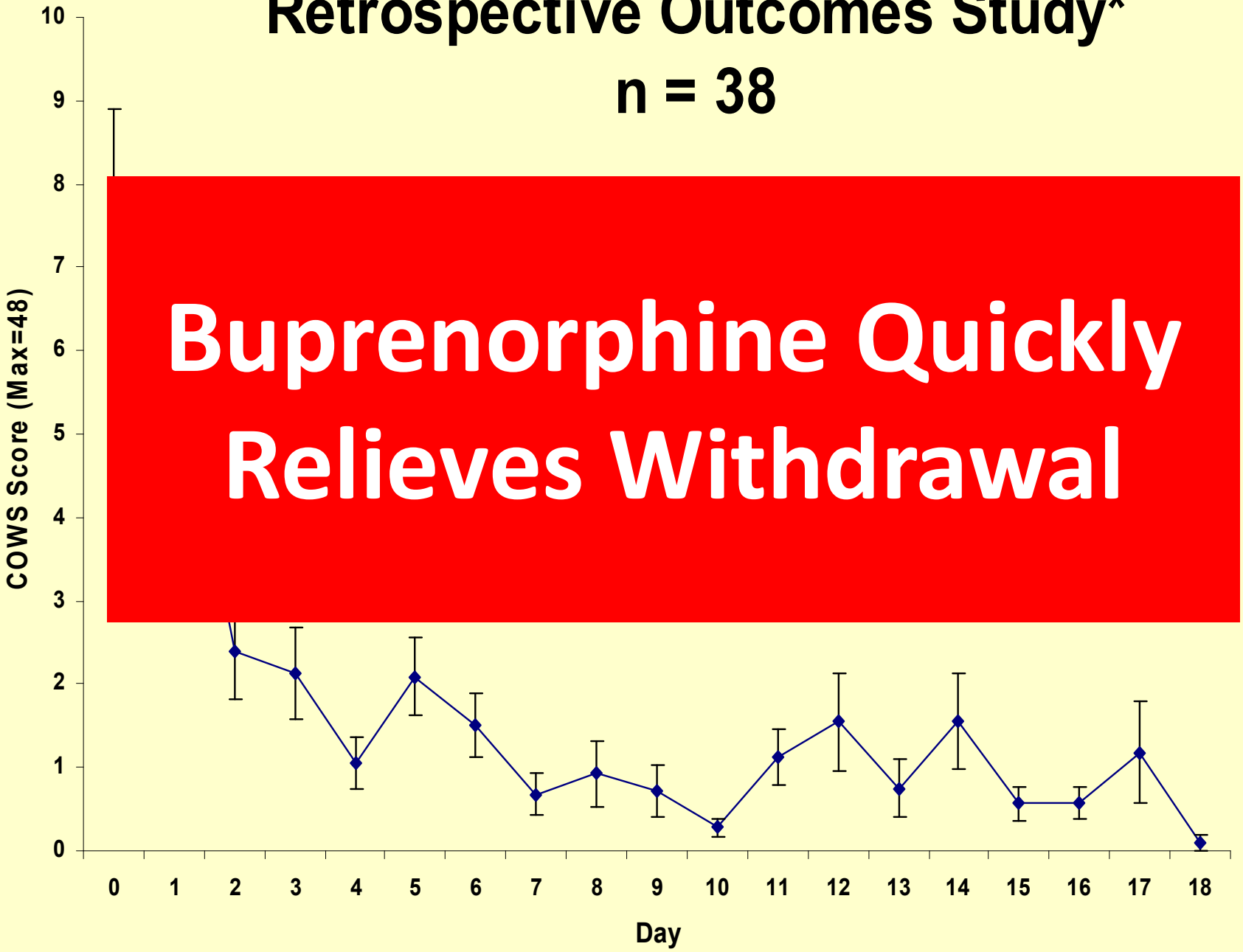
Buprenorphine Blocks Other Opioids, Reduces Overdose Risk

- Long duration of action
- Milder withdrawal

- Sublingual dosing



Mean COWS Scores
Retrospective Outcomes Study*
n = 38



Buprenorphine Quickly Relieves Withdrawal

Buprenorphine Diversion

Smith, 2015 Kentucky survey of illicit drug users

- 36.4% (151/415) report illicit use of buprenorphine
- Primary Motivation
  - 34.3% Self detox
  - 33.6% Avoid withdrawal
  - 18.6% get high (IVDA of film formulation)
  - 13.6% other drugs not available

Susan

- 64 yo grandmother with angina s/p stent with opioid withdrawal-like symptoms per nurse
- Initially denied drug use until withdrawal worsened
- Met with Project Engage, admitted inhaling 3-4 bundles of heroin a day with her husband for last 2 years. Initially started with oxycodone, cut off from RX for overuse by her primary care physician
- Spending $1800/month - greatly ashamed
- Primary motivation: “just want to be normal again…..wake up in the morning and drink a cup of coffee with my husband.”

Case : Susan

- While admitted to the medical service, inducted onto Suboxone 16mg with good response
- Very sensitive to withdrawal > stigma but nurses on board and team worked hard to comfort her
- 'No showed' post discharge followup at the Suboxone clinic. (we were very angry)
  - Shared her buprenorphine with her husband, ran out and relapsed
- Numerous efforts to reach out and eventually re-inducted her and her husband.
- Christmas 2017, spent time with their grandchildren
- They continued in outpt care for greater than a year, and at last contact were doing well without re-hospitalization.

Methadone

- **Analgesia** – q 8 hours pill form
- **Addiction tx** – qd liquid form (>80mg)
- **Withdrawal** – qd liquid (<30mg)
  - Maximum of 3 days of treatment – Fed rule
  - 30, 20, 10mg qd or
  - 20, 10, 5mg qd
  - Do not (never) prescribe take home doses

Severe Pain and Opioid Withdrawal

- **Remember – nociceptive +++ central neuropathic and "limbic pain"**
- **Treat aggressively with morphine or Oxycodone**
  - Oral when tolerating PO
  - Frequent pain checks first 1-2 days
  - Titrate UP
  - Change to long acting/short acting

Detox = Poor Outcome

- N = 653 Rx drug dependent patients
- Phase 1 – Short term 2 week bup/naloxone tx
  - only **6.6%** (43 of 653) successful = no opioid use
- Phase 2 – Extended 12 week bup/naloxone tx
  - **49.2%** (177 of 360) successful
- If tapered off bup – only **8.6%** successful by week 24
- Counseling and chronic pain had no effect on outcomes

Weiss, etal., Archives of General Psychiatry 2011;68(12):12381246.

Detox Increases Risk of OD and Death

- Loss of tolerance and overdose mortality after inpatient opiate detoxification: follow up study, Strang, J., BMJ, May 3; 2003.
- Psychosocial and pharmacological treatments versus pharmacological treatments for opioid detoxification . Cochrane Database Syst Rev . Amato L ., 2004
- Risk of fatal overdose during and after specialist drug treatment: the VEdeTTE study, a national multi-site prospective cohort study, Davoli, M., Addiction Nov 2007
- Overdose after detoxification: A prospective study, Wines, J., Drug and Alcohol Dependence, July 2007
- A Call For Evidence-Based Medical Treatment Of Opioid Dependence In The United States And Canada, Bohdan Nosyk, B,. Health Affairs 2013
- Opioid Abuse in Chronic Pain — Misconceptions and Mitigation Strategies, Volkow, N., New England Journal of Medicine, March 2016

Treatments

- Outpatient
- Inpatient
- Drug-free

- Medication-Assisted Treatment (MAT)
- Fellowship – Narcotics Anonymous
- **Outcome associated with length of time in treatment** ★★★★★

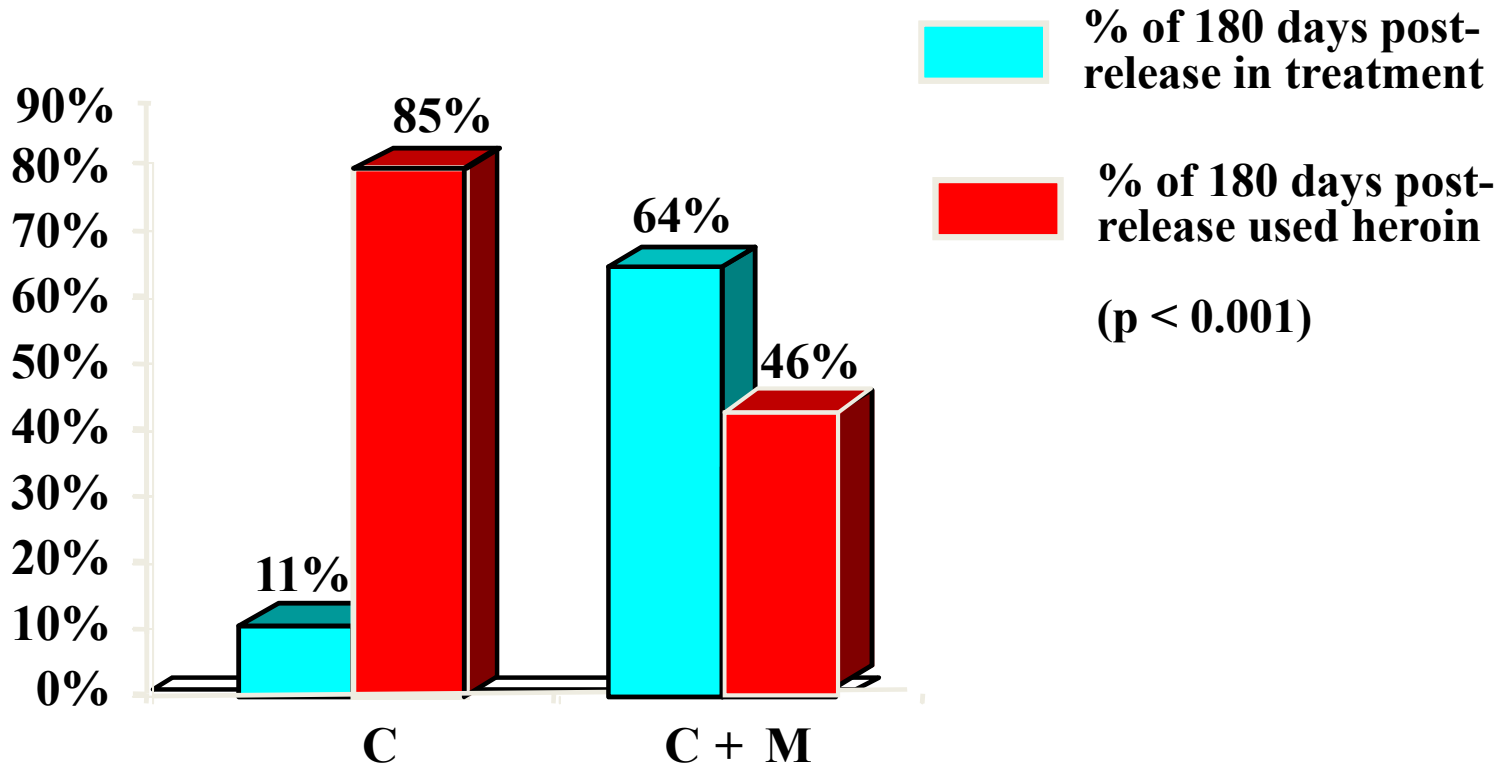
Methadone

- Dolophine – Germany 1937
- Rockefeller University 1965
- More effective than non-pharmacological approaches in **retaining** patients in treatment and in the **suppression** of heroin use as measured by self report and urine/hair analysis (6 RCTs, RR = 0.66 95% CI 0.56-0.78)

Mattick RP, Breen C, Kimber J, Davoli M. Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. Cochrane Database of Systematic Reviews 2009

MMT: Impact on Treatment & Heroin Use

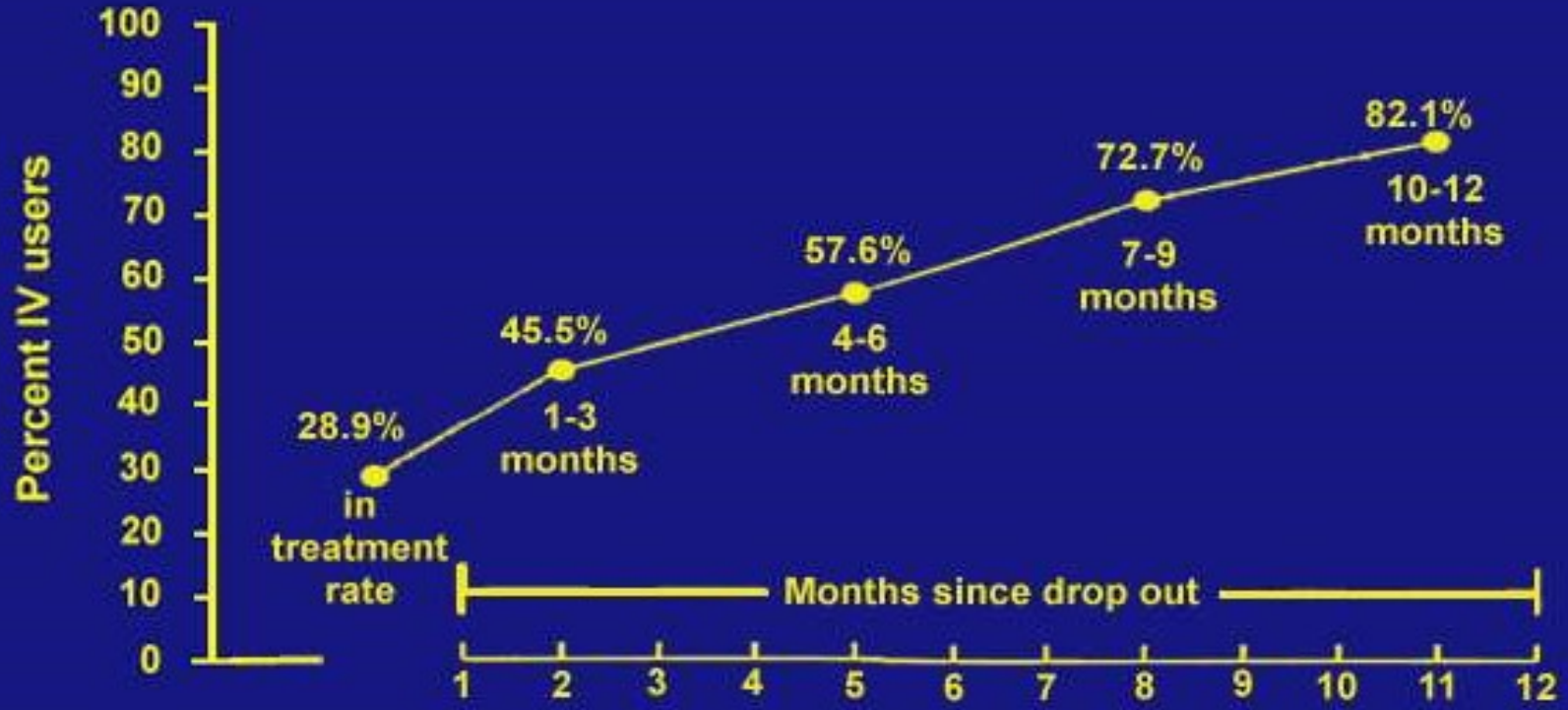
During the 6 Mos. Post-release From Prison ± MMT (N=141)



C = Counseling Only (N=70)
C+M = Counseling & Methadone Started in Prison (N=71)

Gordon, MS et al., Addiction 103:1333-1342, 2008.

Gastfriend, MD. "Medication-Assisted Treatments (MAT) for Opioid Use Disorder", 4th Annual Addiction Medicine Symposium, Delaware, August, 2016



Relapse to intravenous drug use after methadone maintenance treatment for 105 male patients who left treatment.

Gastfriend, MD. "Medication-Assisted Treatments (MAT) for Opioid Use Disorder", 4th Annual Addiction Medicine Symposium, Delaware, August, 2016

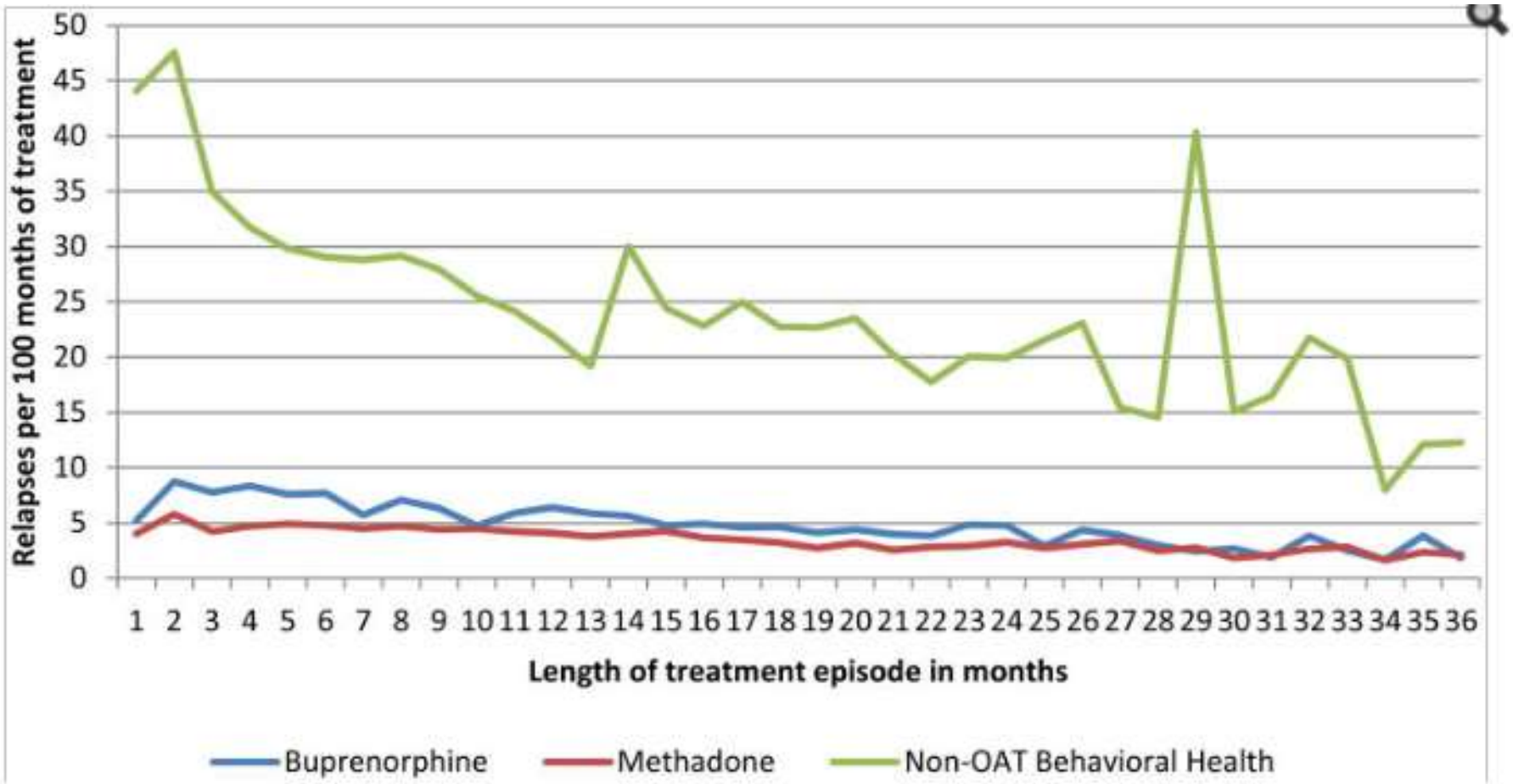
Benefits of MAT

Risk Factors for Relapse and Higher Costs Among Medicaid Members with Opioid Dependence or Abuse: Opioid Agonists, Comorbidities, and Treatment History.

Clark et.al. J Subst Abuse Treat, May 2015

- Medicaid claims 52,278 Massachusetts beneficiaries 2004-10
- Being in MAT reduced risk relapse 50% vs behavioral tx
- Longer in treatment the lower the risk of relapse
- MAT expenditures/month $155-233 lower than behavior tx

MAT Reduces Relapse Compared to Behavioral Treatment Alone

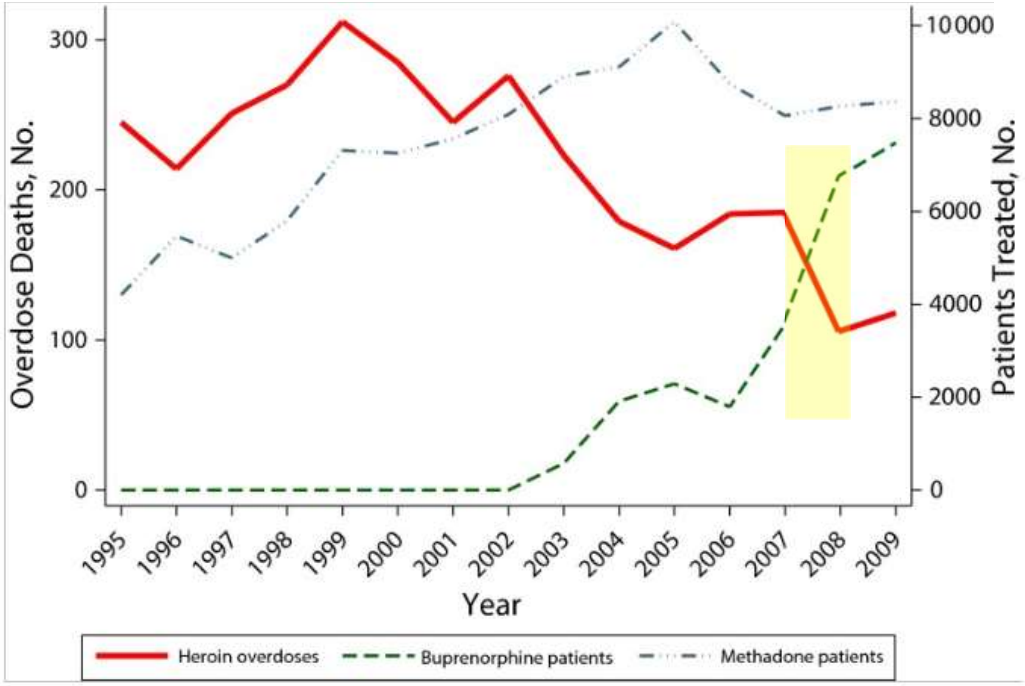


Relapses during treatment among MassHealth members who received treatment for opioid addiction between 2003 – 2010[1]

Reducing Overdose Deaths- MAT

Baltimore – Schwartz

- Longitudinal series analysis of archival data 1995-2009
- 4x expansion of Methadone and Buprenorphine services* associated with 62% reduction of overdose deaths



*sharpest drop from 2007 to 2008 associated with doubling of buprenorphine access

Schwartz et al. American Journal of Public Health, May 2013

Reducing Overdose Deaths- MAT

Mortality risk during and after opioid substitution treatment: systemic review and meta-analysis of cohort studies – Sordo et.al. BMJ, April 2017

- 19 cohorts, n =122,885 treated with methadone 1.3-13 years and 15,831 treated with buprenorphine 1.1-4.5 years
- Being in MAT significantly reduced mortality risk
- Induction onto methadone and stopping both most dangerous
- **Methadone**: all cause mortality 11.3 vs 36.1/1000 person yrs
  overdose mortality 2.6 vs 12.7 (5x reduction)
- **Buprenorphine**: all cause mortality 4.5 vs 9.5 (2x reduction)
  overdose mortality 1.4 vs 4.6 (3x reduction)

Extended-Release Naltrexone

- 380mg IM injection monthly
- Double-blind, placebo-controlled, randomized, 24-week trial of 250 Russian patients with opioid dependence disorder
- **Confirmed abstinence** was **90·0%** vs **35·0%** in the placebo group (p=0·0002).
- **Opioid-free days** **99·2%** vs **60·4%** (p=0·0004)
- **Decreased craving** (p<0·0001).
- **Better retention** was over 168 days vs 96 days (p=0·0042)

THE LANCET

Injectable extended-release naltrexone for opioid dependence: a double-blind, placebo-controlled, multicentre randomised trial. Krupitsky, Lancet. 2011 Apr 30;377(9776):1506-13

Extended-Release Buprenorphine

Sublocade™
(buprenorphine extended-release)
injection for subcutaneous use Ⓒ
100mg·300mg

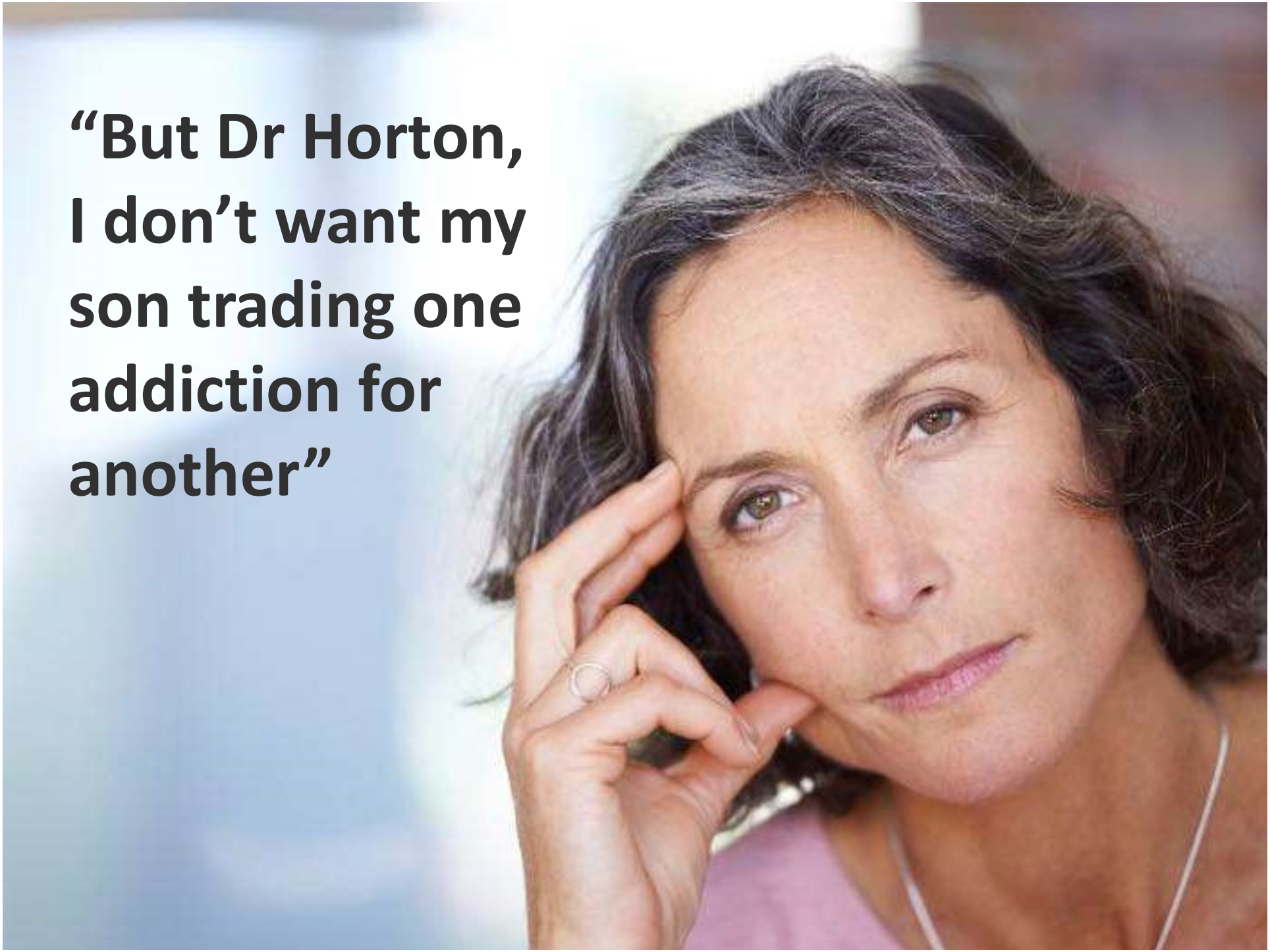
INDIVIOR

- FDA approved 11/30/17, available Q1, 2018 $1530 per injection
- Monthly injection provides steady state with >70% mu blockade
- Induct and stabilize on transmucosal buprenorphine prior to initial 300mg abdominal subcutaneous injection monthly x 2 then 100mg sq monthly
- Will require Waiver – X number to prescribe
- Closed distribution, pharmacy requires REM certification

Summary: Benefits of MAT

- Facilitates retention in drug treatment*
- Reduces heroin use*
- Reduces relapse**
- Reduces overdose deaths and overall mortality***

* Mattick, RP., Cochrane Database Syst Rev. 2009
* Gordon, MS et al., Addiction, 2008
** Clark et.al. J Subst Abuse Treat, May 2015
***Schwartz et al. American Journal of Public Health, May 2013
***Sordo et.al. BMJ, April 2017


“But Dr Horton,
I don’t want my
son trading one
addiction for
another”

Recovery

- Safety: “There’s no recovery if you’re dead”
- Long term continuity of care and support
- Individualized philosophy
- Social determinants addressed
  - Safe Housing
  - Transportation
  - Meaningful employment
  - Legal
  - Family