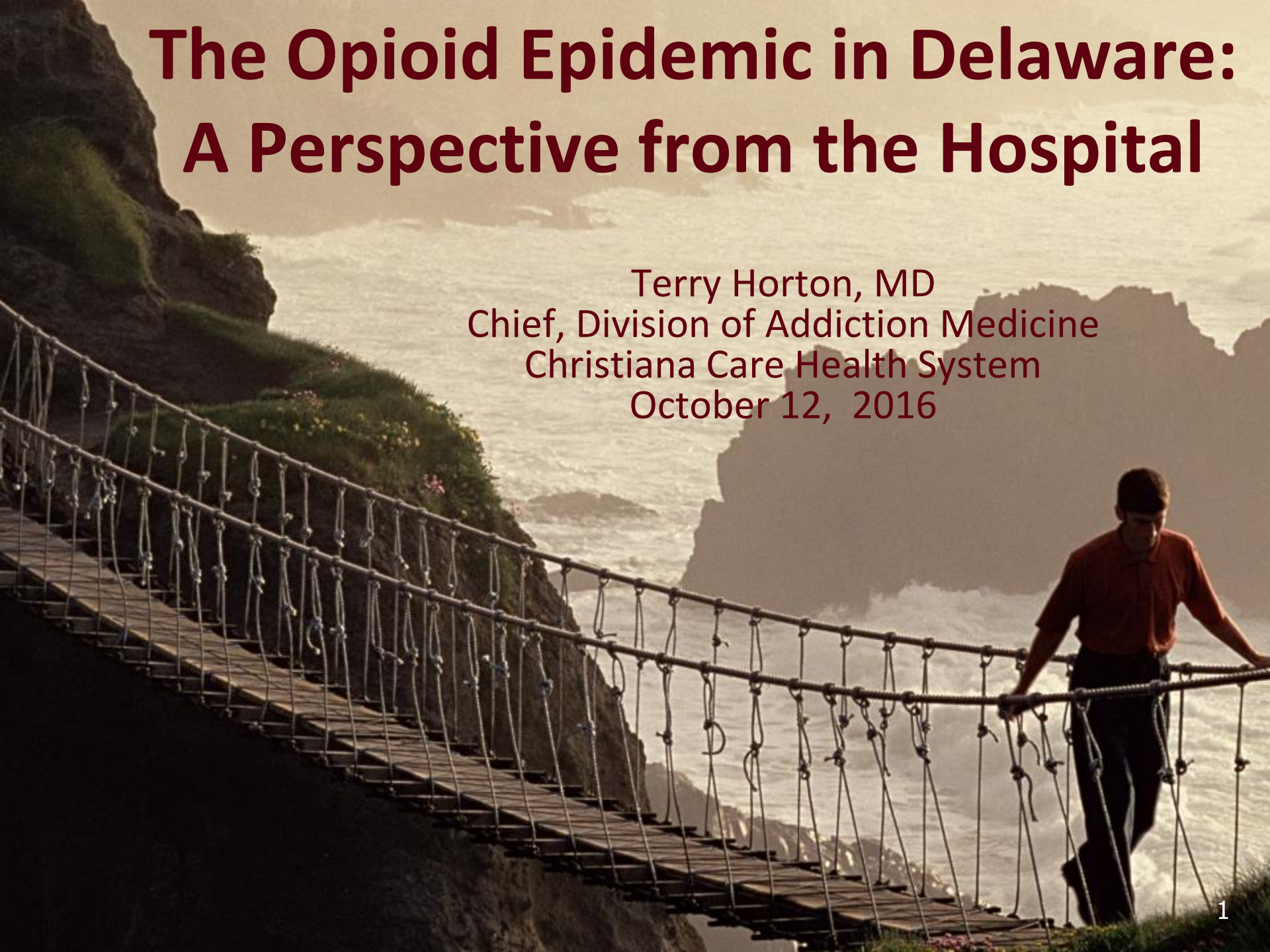
The Opioid Epidemic in Delaware: A Perspective from the Hospital



Terry Horton, MD
Chief, Division of Addiction Medicine
Christiana Care Health System
October 12, 2016

Overview

1. Addiction and Opioids
2. Disturbing Trends
3. Prevention
4. Treatment
5. Christiana Care's Response
   - Opioid Withdrawal Pathway
   - Project Engage

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

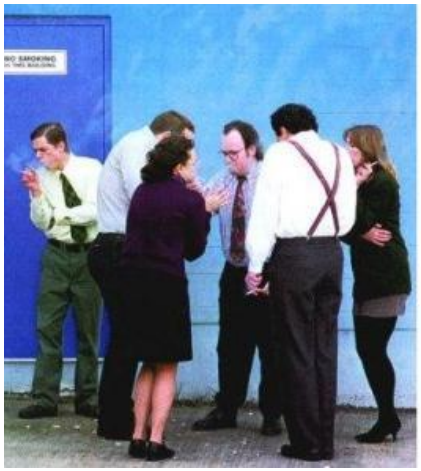
Opioids

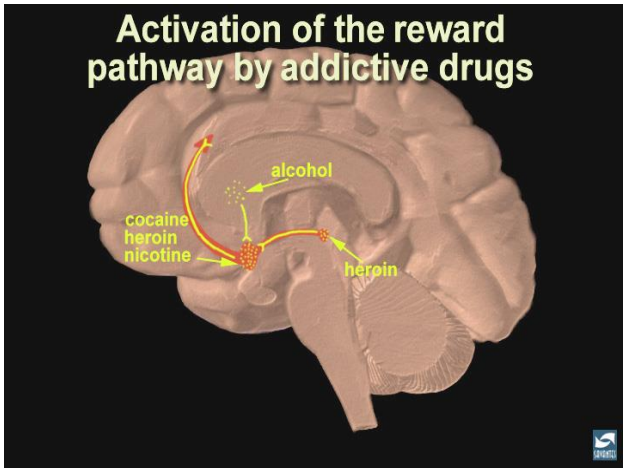
Heroin, morphine, oxycodone, hydrocodone, hydromorphone all interact on the Mu receptor

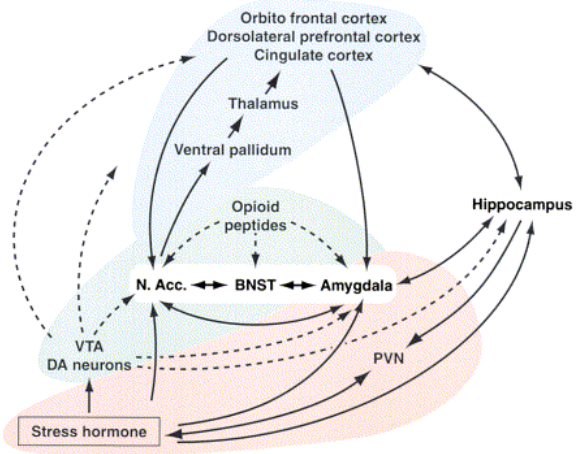
- Relieve pain
- Euphoria
- Dependence/withdrawal with repeated use
- Addiction

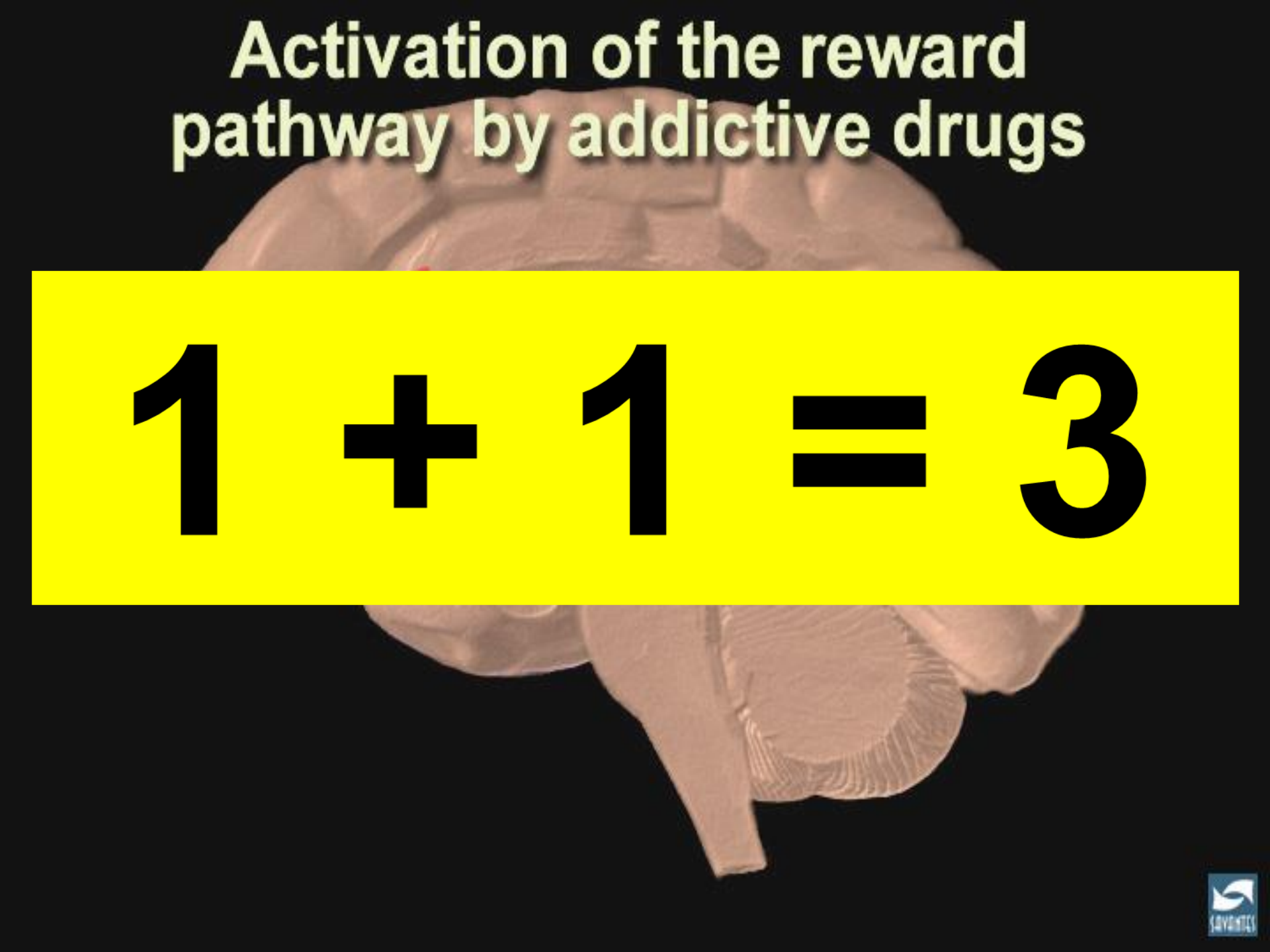
Addiction: an Acquired Brain Disease

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



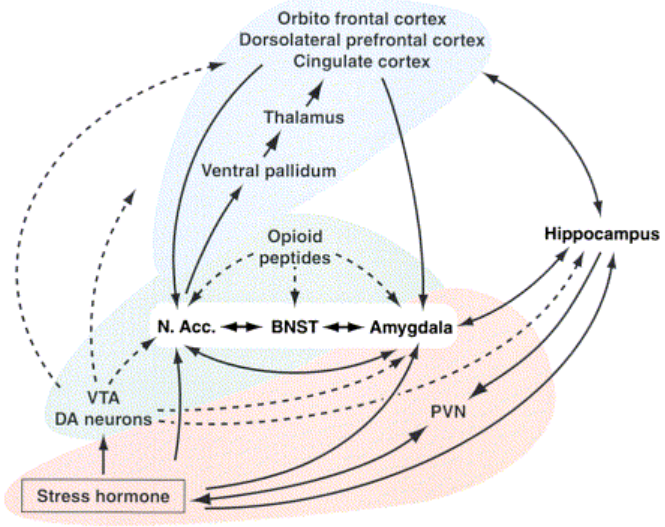




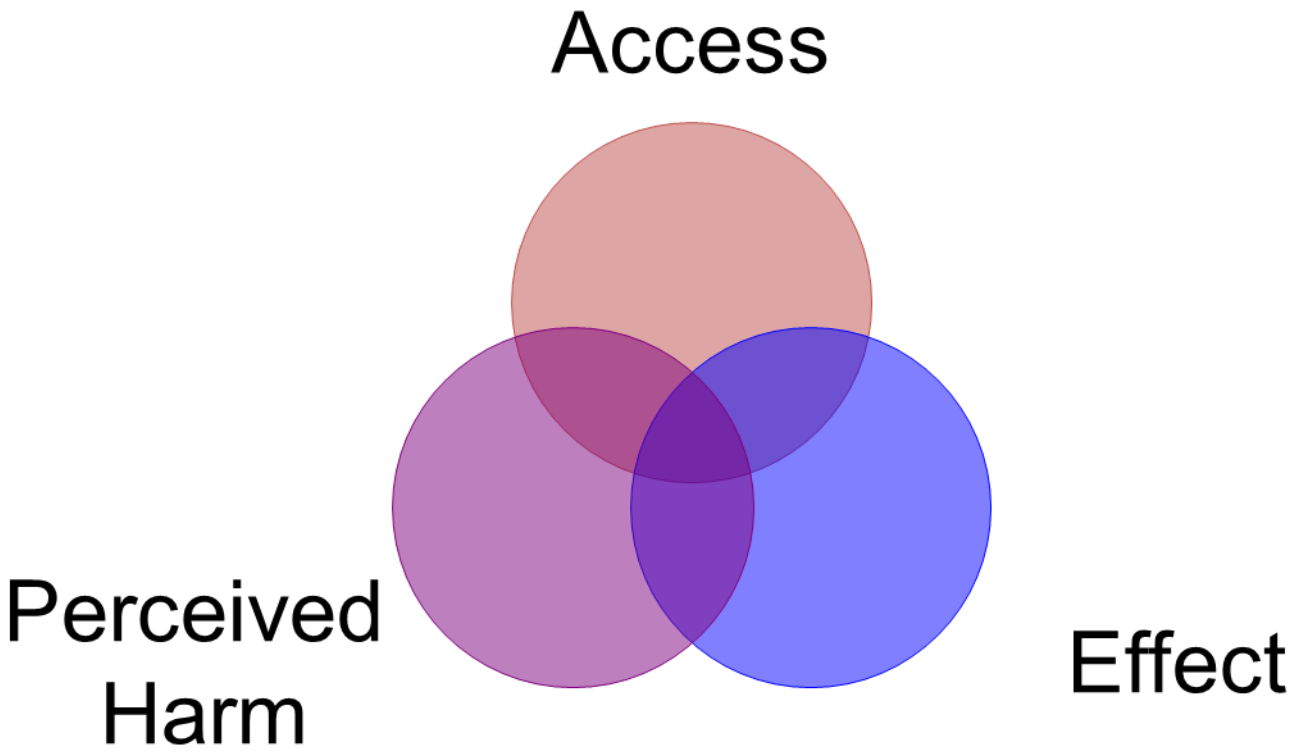

Activation of the reward pathway by addictive drugs
1 + 1 = 3

Opioid Withdrawal

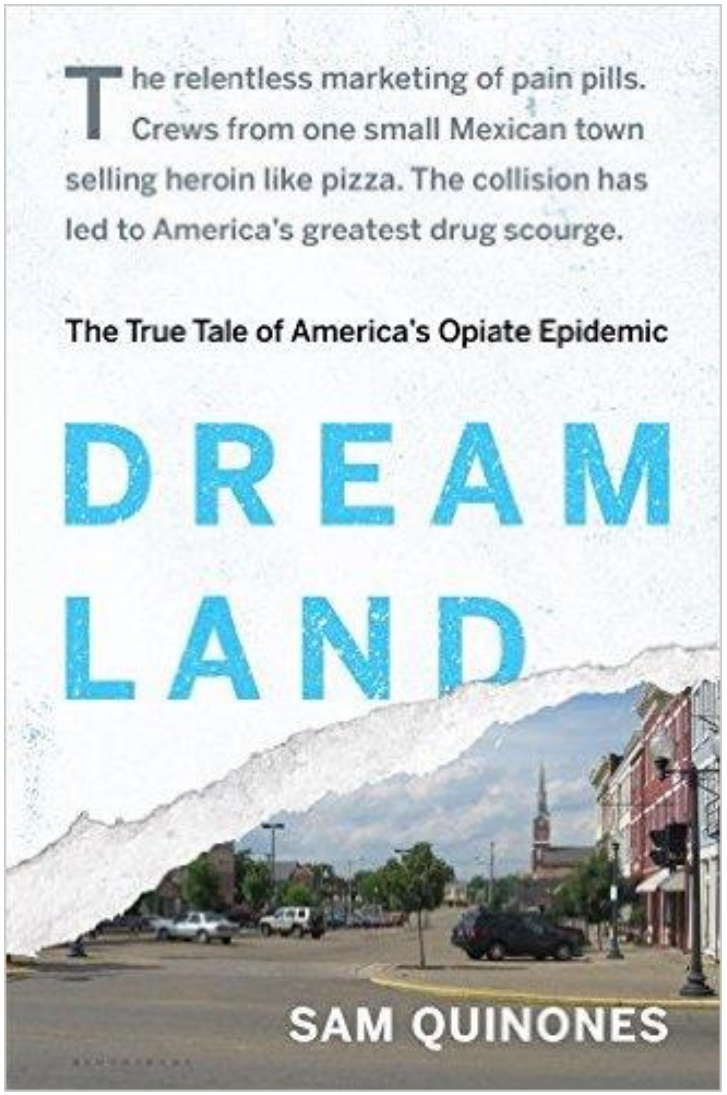
- With dependence, brain mal adapts
- Collection of reproducible symptoms when opioids are removed – PRIMAL MISERY
- Highly motivating



Why So Popular?



Prescription Drug Epidemic



- Date and Time

  Thurs, October 27, 2016

  7:00 PM – 9:00 PM
- Cab Calloway

  School of the Arts

  100 N DuPont Rd

  Wilmington, DE 19805
- Free

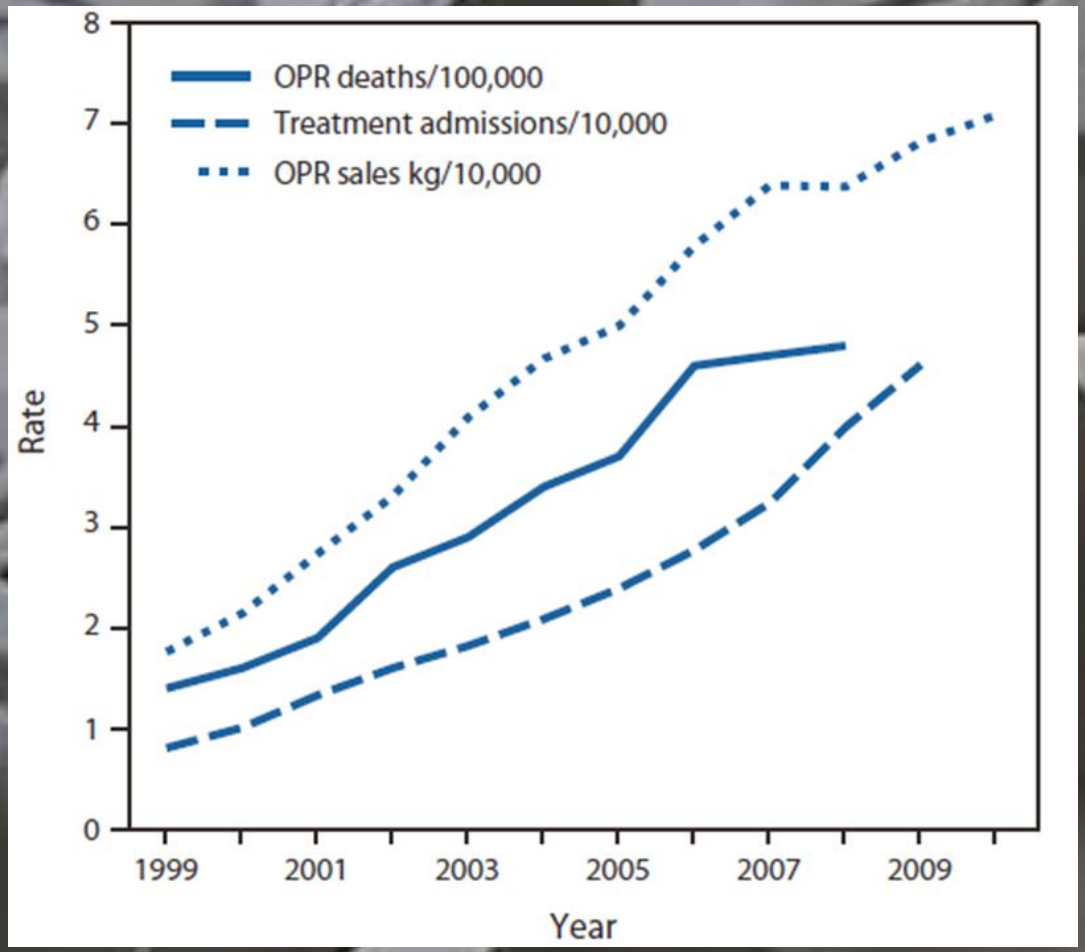
Prescription Drug Epidemic

- 1996, release of extended-release oxycodone
- 2000, Joint Commission on Accreditation of Healthcare Organizations defines standards of care requiring assessment and treatment of pain
- Increased access to opioids through more prescribing
  - Pharma aggressively markets to physicians *
  - Pill mills **
- Less perceived harm or stigma

* Art Van Zee, MD, The Promotion and Marketing of OxyContin: Commercial Triumph, Public Health Tragedy Am J Public Health. 2009 February; 99(2): 221–227.

** Sam Quinones, Dreamland: The True Tale of America's Opiate Epidemic, 2015

Prescription Drug Epidemic



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

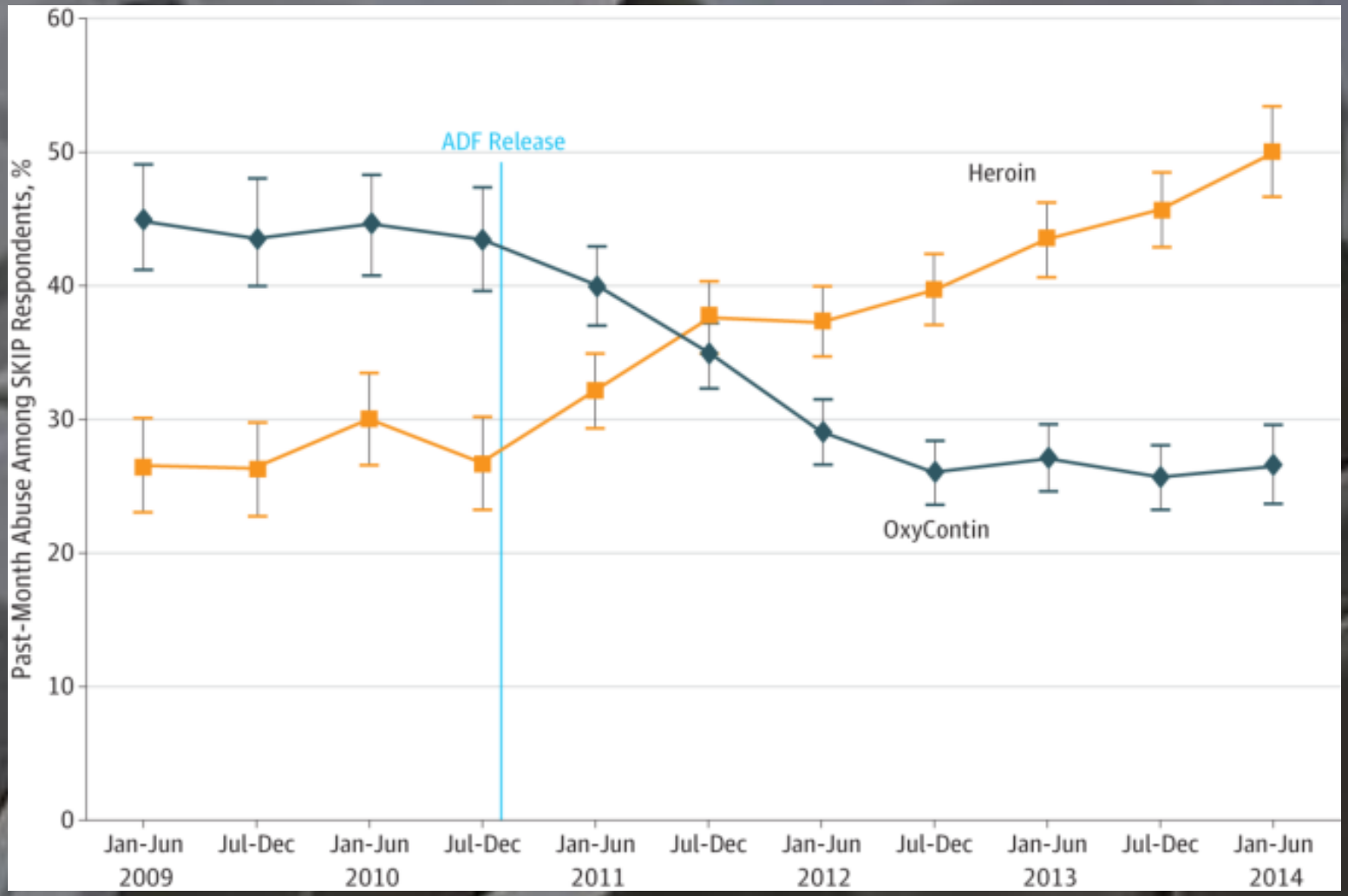
Switching to Heroin

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

Switching to Heroin



Source: Cicero TJ, Ellis MS. Abuse deterrent formulations and the prescription opioid abuse epidemic in the United States: lessons learned from OxyContin. JAMA Psychiatry. 2015 Mar 11.

Opioid Use Disorder in Young Adults

ARTICLE IN PRESS
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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

Silvia S. Martins [a,*], Luis E. Segura [a], Julian Santaella-Tenorio [a], Alexander Perlmutter [a], Miriam C. Fenton [b], Magdalena Cerdá [d], Katherine M. Keyes [a], Lilian A. Ghandour [f], Carla L. Storr [e], Deborah S. Hasin [a,c]

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[b] Rutgers University, Institute for Health, 112 Paterson St, New Brunswick, NJ 08901, USA
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[e] Department of Family and Community Health, University of Maryland School of Nursing, 655 West Lombard St., Baltimore, MD 21201, USA
[f] Department of Epidemiology and Population Health, American University of Beirut, Van Dyck Hall, PO Box 11-0236, Riad El-Solh, Beirut 1107 2020, Lebanon

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.

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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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0306-4603/

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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"

A Different Kind of Heroin Epidemic

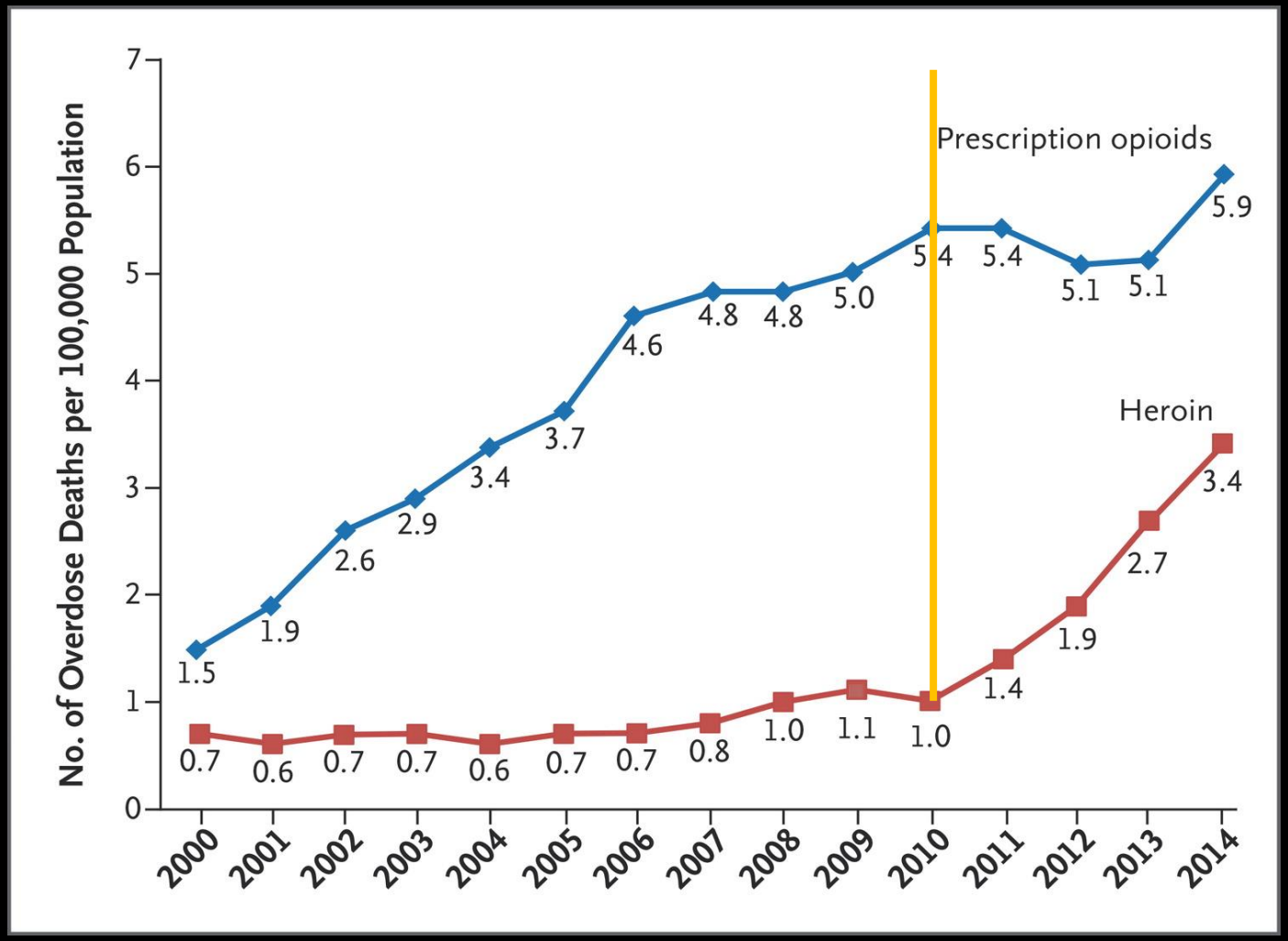
- Previously heroin use concentrated in poor communities of color
- Current demographics radically different
  - White, young, F=M, most employed
  - Very very high dosages of heroin
  - IVDA instead of inhaled
  - Early medical sequelae
  - Late medical sequelae?

FDA News Release

FDA requires strong warnings for opioid analgesics, prescription opioid cough products, and benzodiazepine labeling related to serious risks and death from combined use

Action to better inform prescribers and protect patients as part of Agency's Opioids Action Plan

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

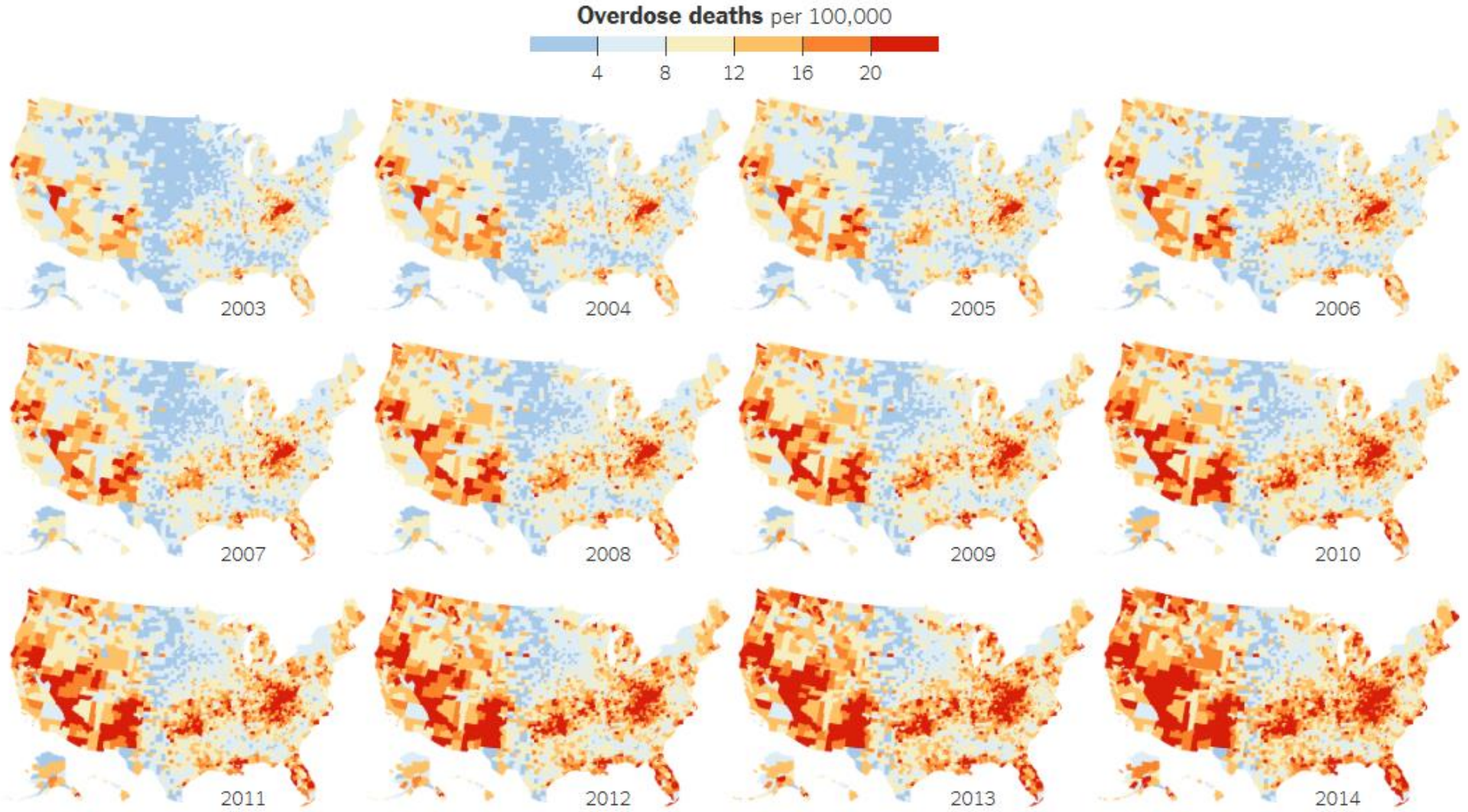


Compton WM et al. N Engl J Med 2016;374:154-163.

The NEW ENGLAND JOURNAL of MEDICINE

How the Epidemic of Drug Overdose Deaths Ripples Across America

By HAEYOUN PARK and MATTHEW BLOCH JAN. 19, 2016



In Delaware

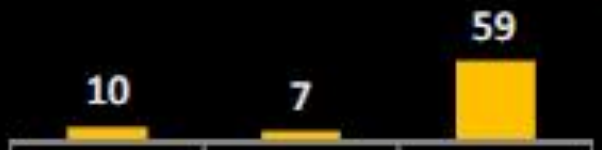
Estimated population = 900,000

- 90000 alcohol/drug disordered*
- 9000 opioid dependent
- Only 10% in treatment**, ***
- 2014 - 189 overdose deaths, 9th in nation with 20.9 per 100,000 compared to U.S. average of 14.7****
- January through Aug. 21, 136 suspected overdose deaths****

* 2004-2005 NSDUH data
** Wright et al. 2007
*** Delaware Department of Health and Social Services (DHSS), Division of Substance Abuse and Mental Health, 2007
**** Secretary Landgraf, 4th Annual Addiction Symposium, CCHS, August 30, 2016

2016 Heroin Incidents*

2016 as of 04/30/2016*



2016 Projected

Suspected Heroin Death

NARCAN Save

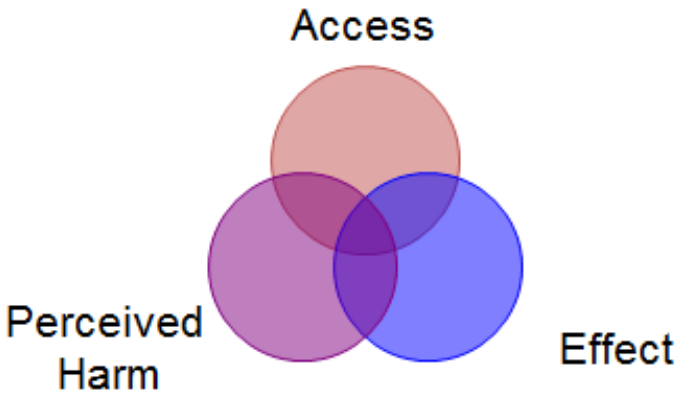
Suspected Heroin Overdose

Overall Strategy

- Prevention of use and overdose
- Identify those in need of care
- Engage into treatment
- Retain in treatment
- Challenges
  - Motivational gap
  - Knowledge
  - Stigma
  - Access to care
  - Fragmented

Overall Strategy - Prevention

- Prevention
  - Reduce access
    - Responsible prescribing
    - Interdiction
  - Increase perceived harm



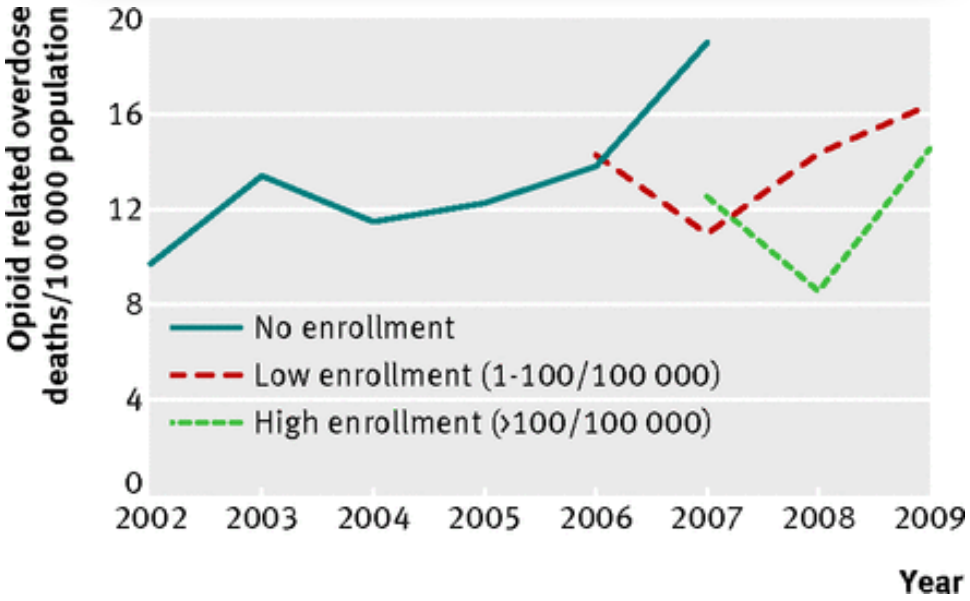
Overall Strategy – Intranasal Narcan

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

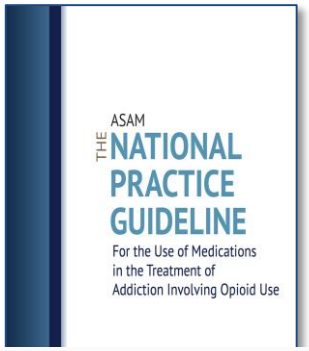
Alexander Y Walley *assistant professor of medicine, medical director of Massachusetts opioid overdose prevention pilot*[1 3], Ziming Xuan *research assistant professor*[2], H Holly Hackman *epidemiologist*[3], Emily Quinn *statistical manager*[4], Maya Doe-Simkins *public health researcher*[1], Amy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



Treatments

- Outpatient
- Inpatient
- Drug-free
- Medication-Assisted Treatment (MAT)
- Fellowship – Narcotics Anonymous

FDA-Approved Anti-Opioid Agents

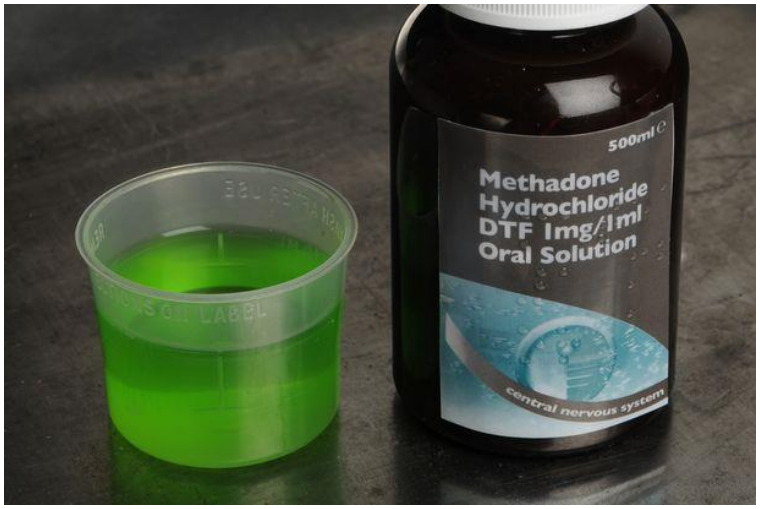


Agent	Dose	Dosing
Buprenorphine sublingual film, tablets (generic)	PO: 2 mg, 8 mg film and tablets	**Initial:** 2–4 mg (Increase by 2–4 mg) **Daily:** ≥8 mg **Max:** 24 mg/day
Methadone tablets/liquid (generic)	PO: 5 mg, 10 mg, tablets; 10 mg/mL liquid	**Initial:** 10-30 mg (Reassess in 3–4 hours; add ≤10 mg PRN) **Daily:** 60-120 mg[a]
Naltrexone XR injection *(Vivitrol®)*	IV/IM: 380 mg in 4 cc	Every 4 weeks
Naltrexone tablets (generic)	PO: 50 mg	**Daily:** 50 mg (May give 2–3 daily doses at once on M–W–F.)

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

Methadone

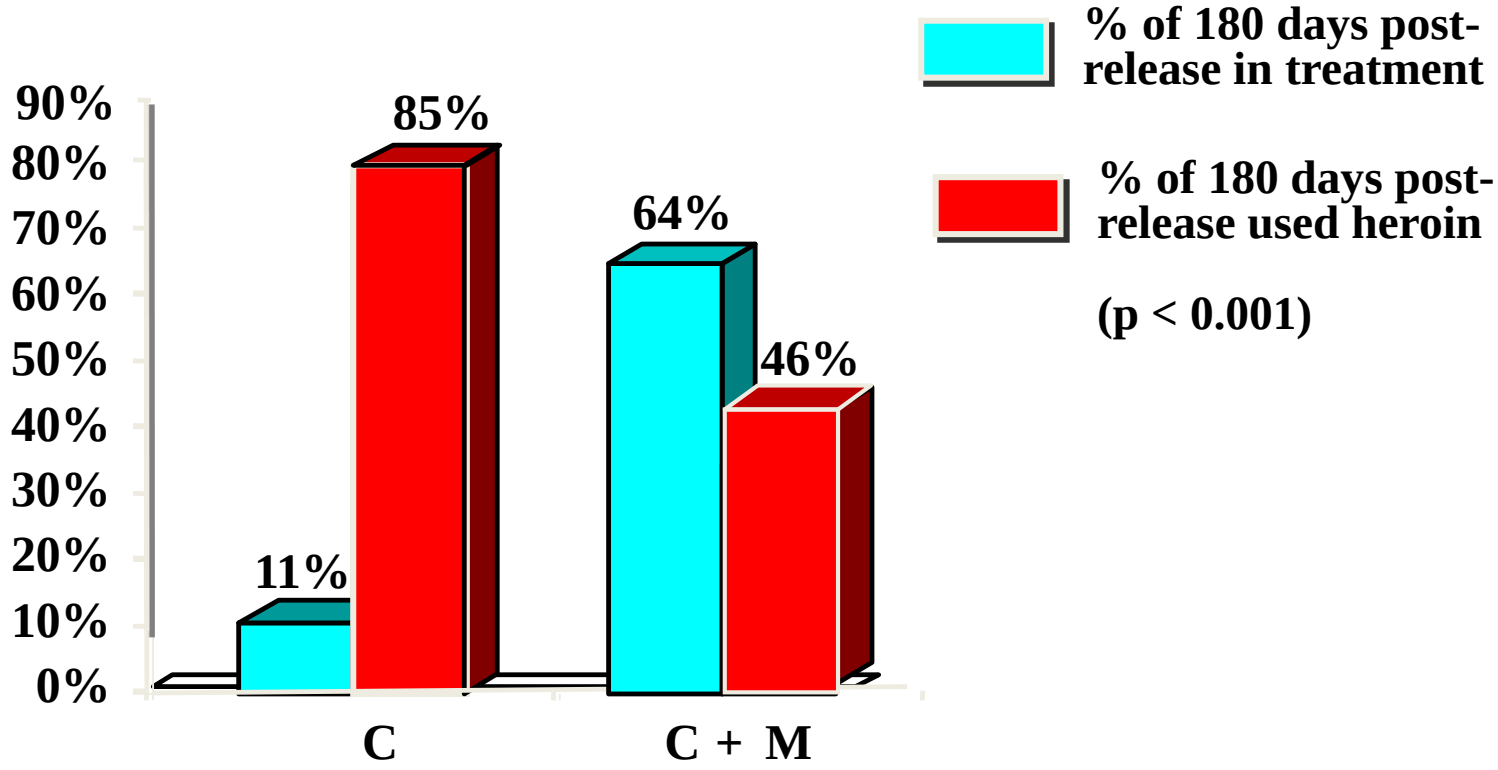
- Dolophine – Germany 1937
- Rockefeller University 1965
- More effective than non-pharmacological approaches in **retaining** patients in treatment and in the **suppression** of heroin use as measured by self report and urine/hair analysis (6 RCTs, RR = 0.66 95% CI 0.56-0.78)



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

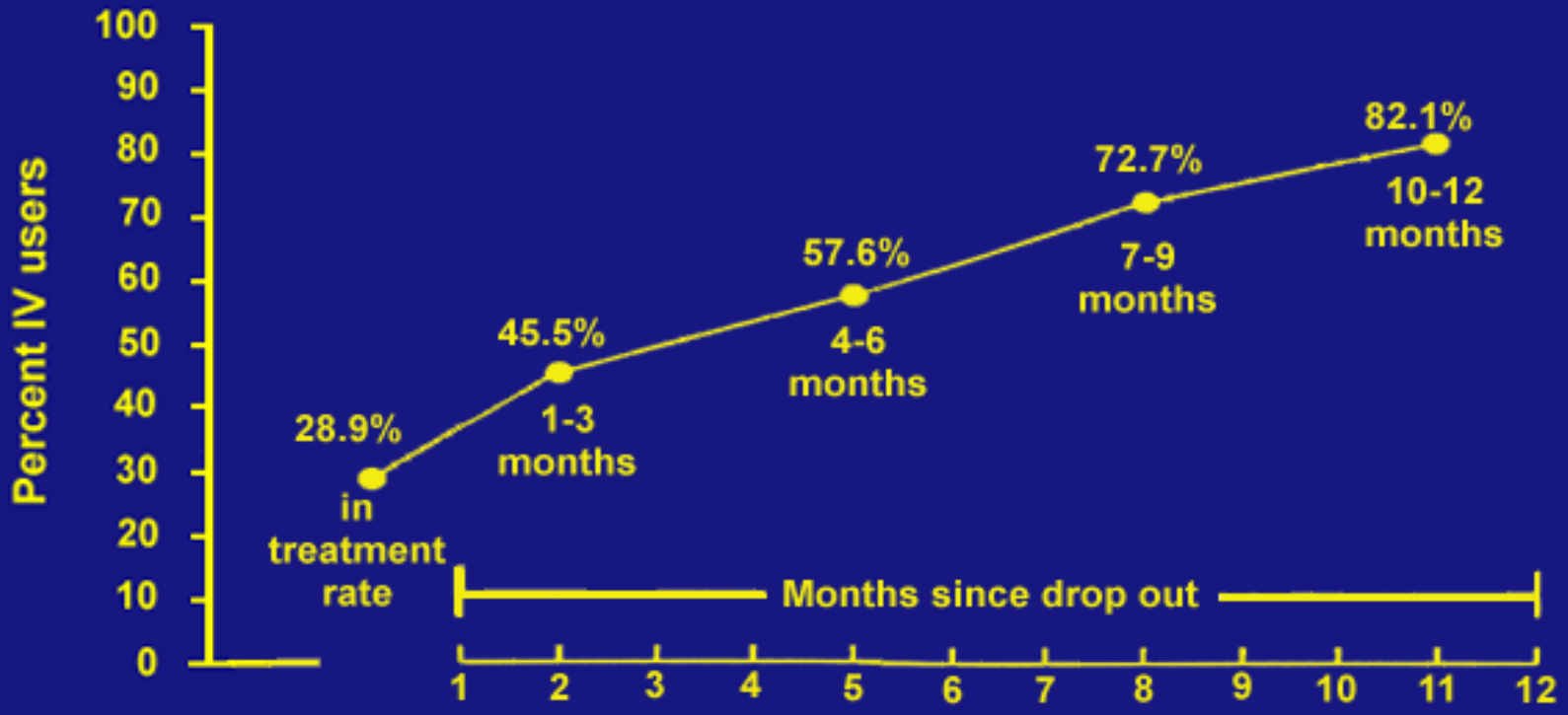
MMT: Impact on Treatment & Heroin Use

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.

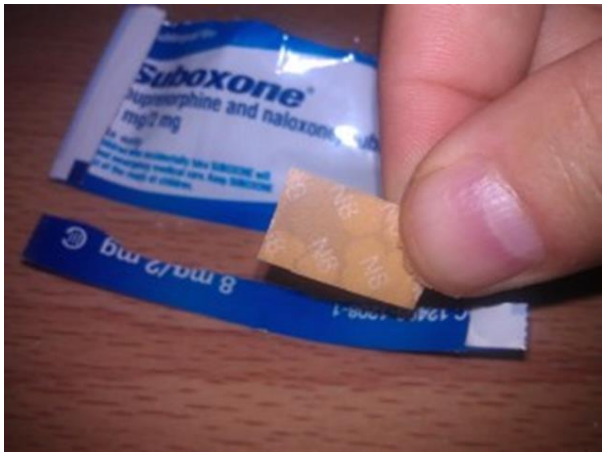


Relapse to intravenous drug use after methadone maintenance treatment for 105 male patients who left treatment.

Buprenorphine

Synthetic opioid with unique properties that make it an effective and safe

- **Partial opioid agonist, "Ceiling Effect"**
  - Limited respiratory depression
- **Slow dissociation from receptor**
  - Long duration of action
  - Milder withdrawal
- **Sublingual dosing**



Prescription Opiate Abuse Treatment Study (POATS)

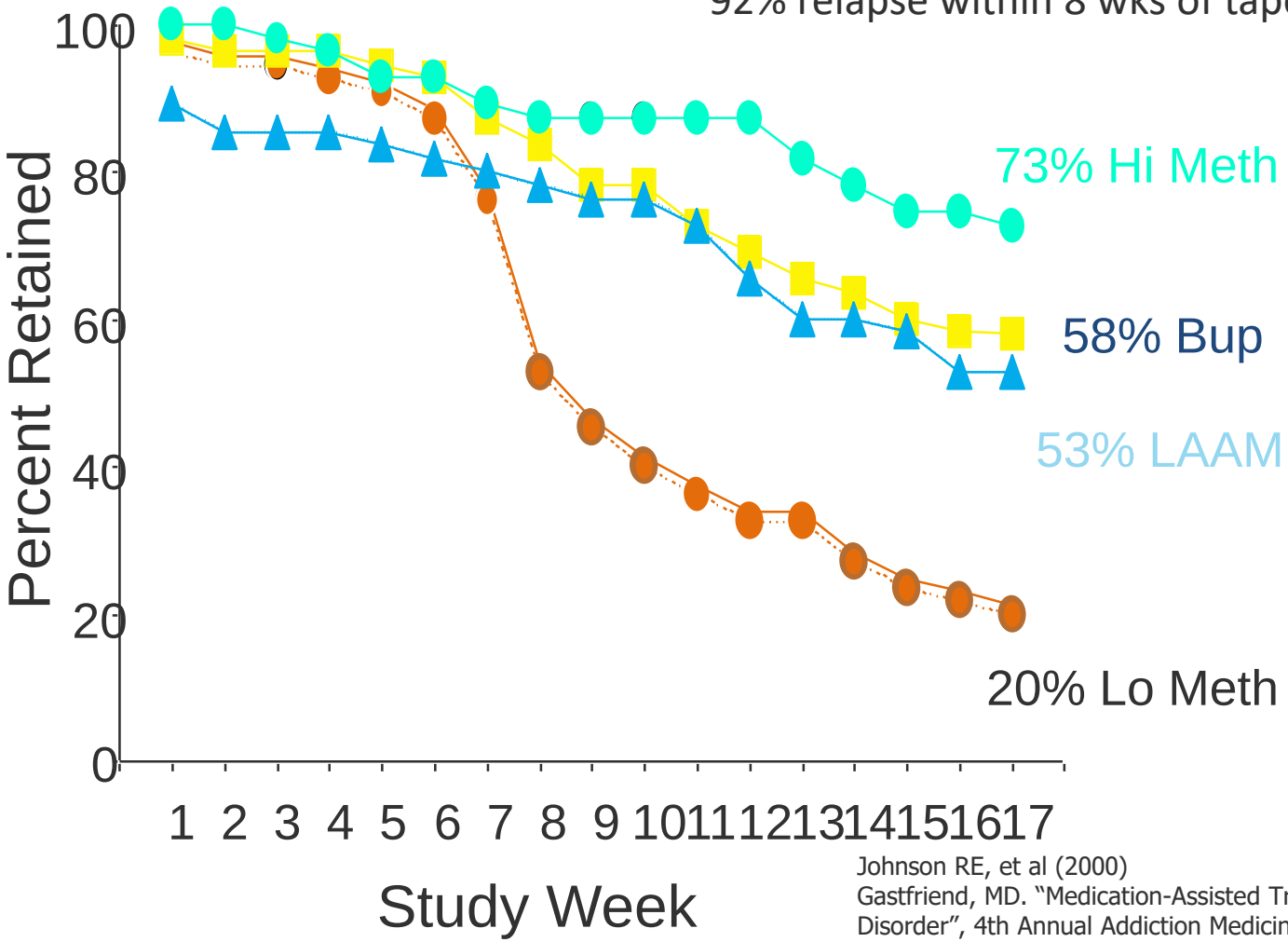
Prescription Opiate Addiction Study (POATS)
CTN 0030

- N = 653 Rx drug dependent patients
- Phase 1 – Short term 2 week bup/naloxone tx
  - only **6.6%** (43 of 653) successful
- 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.
http://ctndisseminationlibrary.org/display/693.htm

Agonists: Treatment Retention

Mean retention on BUP:
Yser, Addiction 2014: 66 days
Baser, AJMC, 2011: 69 days
Fishman, CPDD 2011: 9.6 wks (adol/young adults)
92% relapse within 8 wks of taper (Weiss et al., 2011)

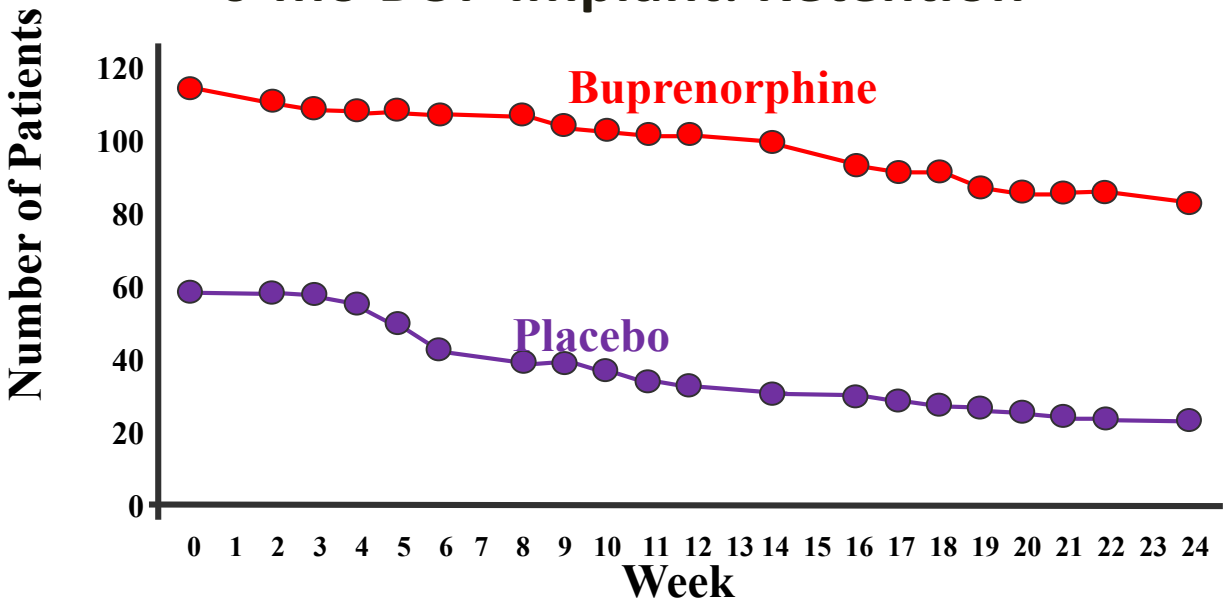


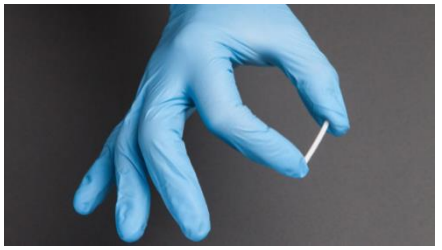
Johnson RE, et al (2000)
Gastfriend, MD. "Medication-Assisted Treatments (MAT) for Opioid Use Disorder", 4th Annual Addiction Medicine Symposium, Delaware, August, 2016

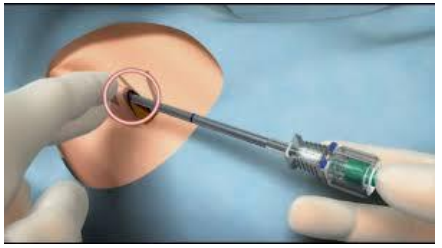
Probuphine

- 6 mo. BUP implant; FDA approved May 2016
- Subdermal surgical insertion & removal at 6-months
- Adverse events: implant-site reactions, BUP reactions
- Braeburn's REMS program required, to reduce implant migration, expulsion & nerve damage

6-mo BUP Implant: Retention







Modified from Ling, W. et al. JAMA 2010
Gastfriend, MD. "Medication-Assisted Treatments (MAT) for Opioid Use Disorder", 4th Annual Addiction Medicine Symposium, Delaware, August, 2016

Injectable 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

Who Is going to Address This??

- States have been the safety net provider but
  - Woefully under financed
  - Fragmented, silo'd = poor care
- Patient Protection and Affordability Care Act and Mental Health Parity Act and Addiction Equity Act of 2010
  - substance abusers now insured, need care
  - Health systems have an emerging imperative:
    - must manage the negative impact of substance abusing populations.

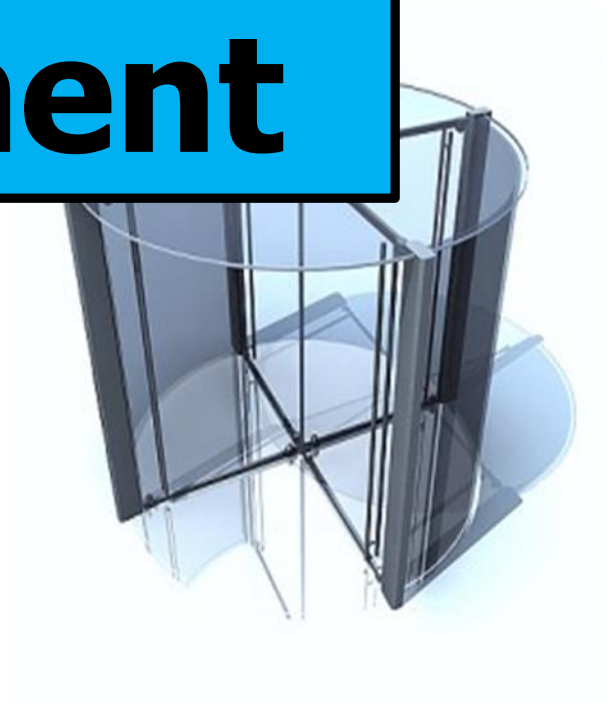
Hospitals Aggregate the Addicted

- Doors are always open
- Me
- Sub re*

BUT

- Poo
- Poor clinical outcomes
- Over-utilization**
- Historically a revolving door

Opportunity for improvement



* Saitz, JGIM, 2006; Bertholet, JGIM, 2010
** Walley. J Addict Med, 2012

CHRISTIANA CARE HEALTH SYSTEM

- Wilmington/Christiana Hospitals - 1,100 beds
- 173,857 ED visits (22cd in the nation)
- 53,621 admissions (22cd in the nation)

Opioid Withdrawal is a Safety Issue

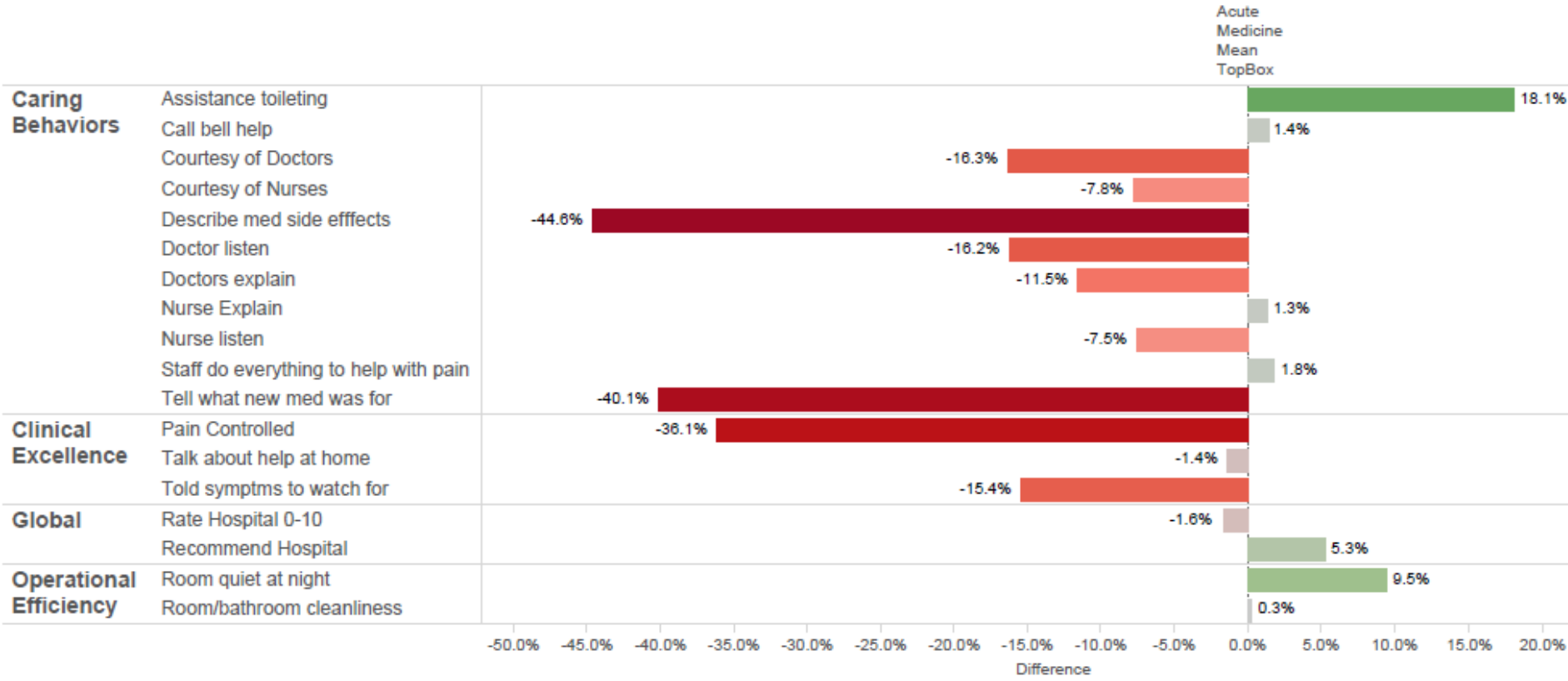
Poorly addressed opioid withdrawal negatively impacts:

1. ability to address acute serious health consequences of addiction
2. ability to engage and transition into community-based drug treatment

Ti, Am J Public Health. 2015 Dec;105(12):e53-9. http://www.ncbi.nlm.nih.gov/pubmed/26509447
Ti, PLoS One. 2015 Oct 28; http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4624845/

Poor Patient Satisfaction

Clinical Pathway Integration Analysis
Exceptional Experience
Opiod Withdrawal

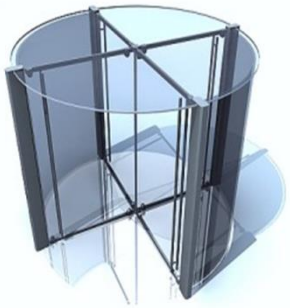


% difference in question score Opioid Withdrawal patient vs Acute Medicine Service Line patient

Negative Impact on the Health System

Costly

- Inordinate spending without addressing the root cause
- Inpatient stays are the primary cost drivers
- Expensive revolving door
  - higher use of ER (2.3x), inpatient care (6.7x)**
  - Increased AMA, readmissions***
- Opiate Abusers cost additional $14-20,000/patient/yr compared to non-users****



* Saitz, JGIM, 2006; Bertholet, JGIM, 2010
** Stein, J Sub Abuse, 1993
*** Hwang, 2003; Jankowski, 1977; Chan, 2004; Walley 2012
****White, 2005

Christiana Care's Response

- Emergency Room and Inpatient Service
  - Screening and Identification
  - Treatment of Withdrawal
  - Inpatient initiation of drug abuse treatment
  - Addiction Medicine Consultation Service
  - Referral to community-based care
  - Special populations such as pregnant women
- Project Engage
- Outpatient
  - Integration into Primary Care
  - Referral to community-based care
  - Medication-assisted treatment

Opioid Withdrawal Pathway

- Launched in May, 2016
- Screening of all medical admissions
- Approx 5% of medical admissions screens positive
- 2.2% of medical admissions are in at least mild opioid withdrawal from heroin
- Expect to identify at least 500 heroin use disordered patients

Opioid Withdrawal Treatment

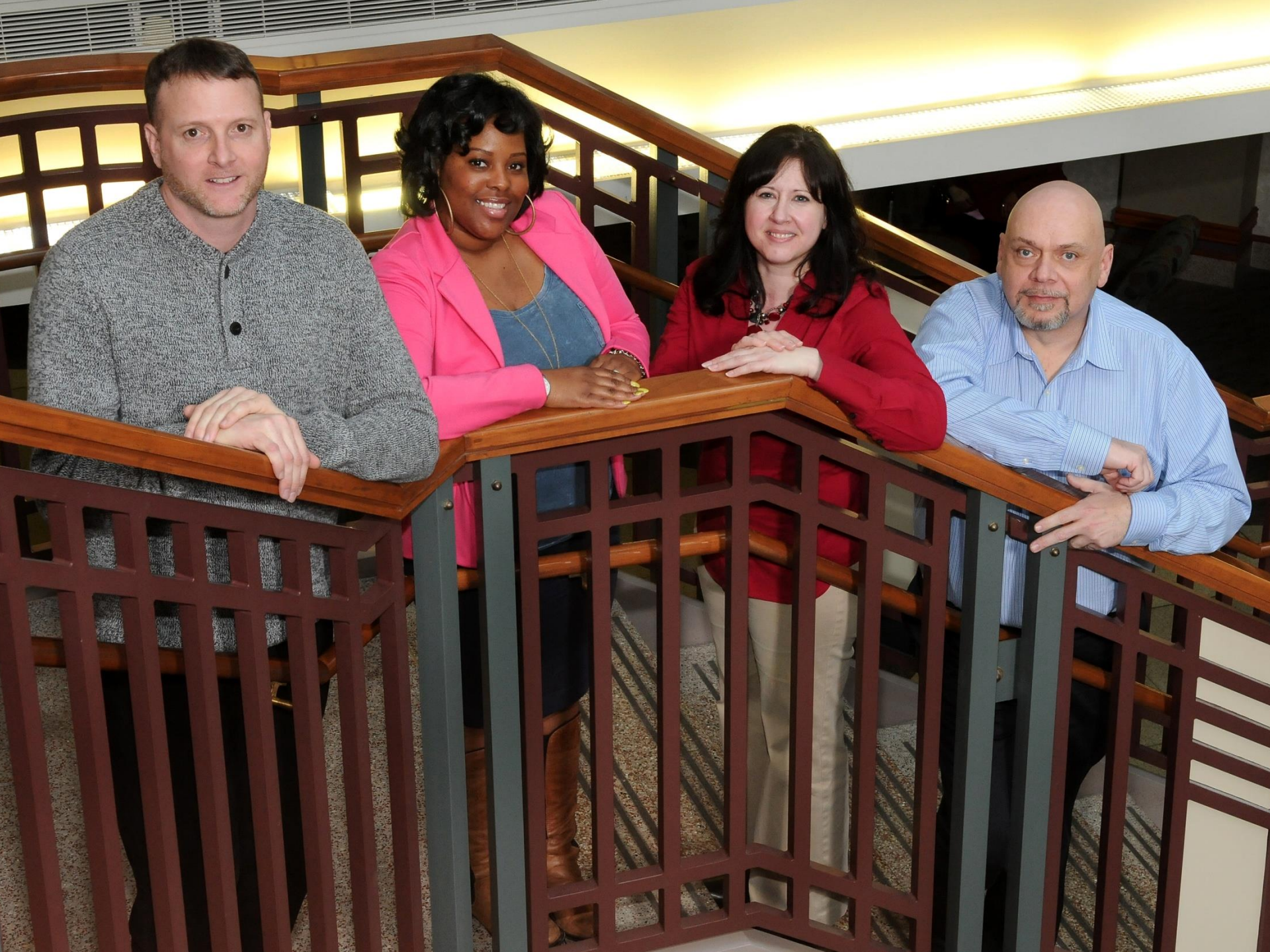
- Avoidance of withdrawal is highly motivating
- Hospitalists can initiate automated treatment protocol
- Project Engage peer counselors meet patients at the bedside and assist the medical teams
- Continuation to medication-assisted treatment and referral to community-based drug treatment
- Connections early data: n = 29
    - 48% successfully transferred to care
    - 75% retained at least 1 month

Project Engage

- Founded in 2008
- Imbedded peer counselors from local drug treatment program
- Bedside peer-to-peer intervention using Motivational Interviewing
- Partnering with a Social Worker

CHRISTIANA CARE HEALTH SYSTEM

BCCS
Brandywine Counseling & Community Services



Project Engage Plus

- Engagement begins in the hospital
- Peer counselor provides ongoing care:
  - Peer support into the community
  - Adaptive complex case-manager
  - Relapse Prevention
- Early results promising

CHRISTIANA CARE HEALTH SYSTEM

BCCS Brandywine Counseling & Community Services

Project Engage Mother & Child

- Assisting opioid-dependent pregnant patients retain in drug treatment
- Follow through labor to 3 months postpartum
- Peer-counselor driven
- Close working relationship with Nursing and SW
- Improve health metrics of mother and infant

CHRISTIANA CARE HEALTH SYSTEM

BCCS Brandywine Counseling & Community Services

Project Engage for Construction

May 20, 2015

Case: Jason

21 yo landscaper admitted with endocarditis

- Heroin IVDA since 16 yo Junior at high school using several bundles a day, every 4 hours
- Began with oxycodone, marijuana, chewing tobacco
- No previous drug treatment episodes
- Brother in recovery at a half-way house, parents supportive. Fiancé was 2 months pregnant
- Withdrawal identified and treatment initiated with buprenorphine/naloxone which was maintained at 8mg dose.

Case: Jason

- Completed 6 weeks of IV antibiotics, Project Engage facilitated successful transfer to our Medication Assisted Treatment service
- Initially did well but relapsed after 6 months
- Readmitted with recurrence of endocarditis destroying his tricuspid valve.
- Stabilized medically, transitioned onto Vivitrol and counseling, and present for birth of his son
- Discharged, remains engaged into care

Summary

1. Addiction as a dangerous debilitating brain disease
2. Disturbing trends with heroin use and death
3. Prevention, use of intranasal Naloxone
4. Treatment: methadone, buprenorphine, injectable naltrexone, counseling, support
5. Christiana Care's Response
    - Opiate Withdrawal Pathway
    - Project Engage
    - Outpatient care


Questions?