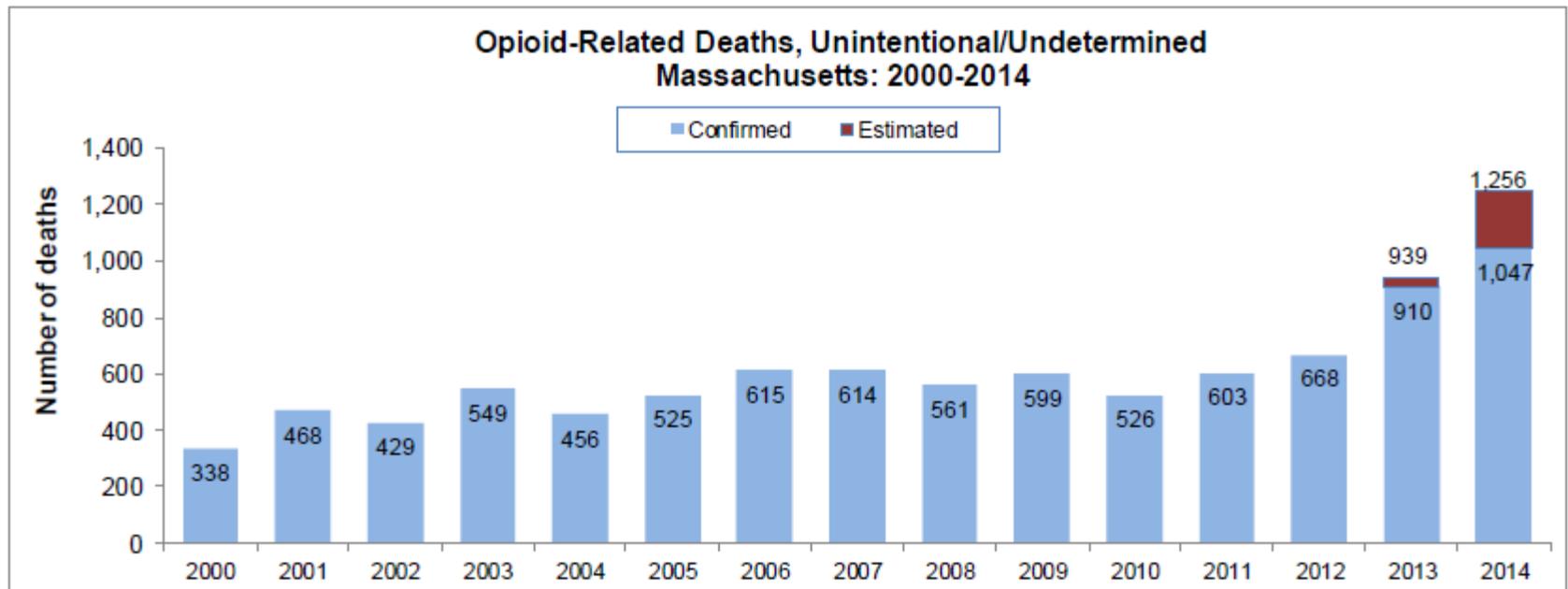


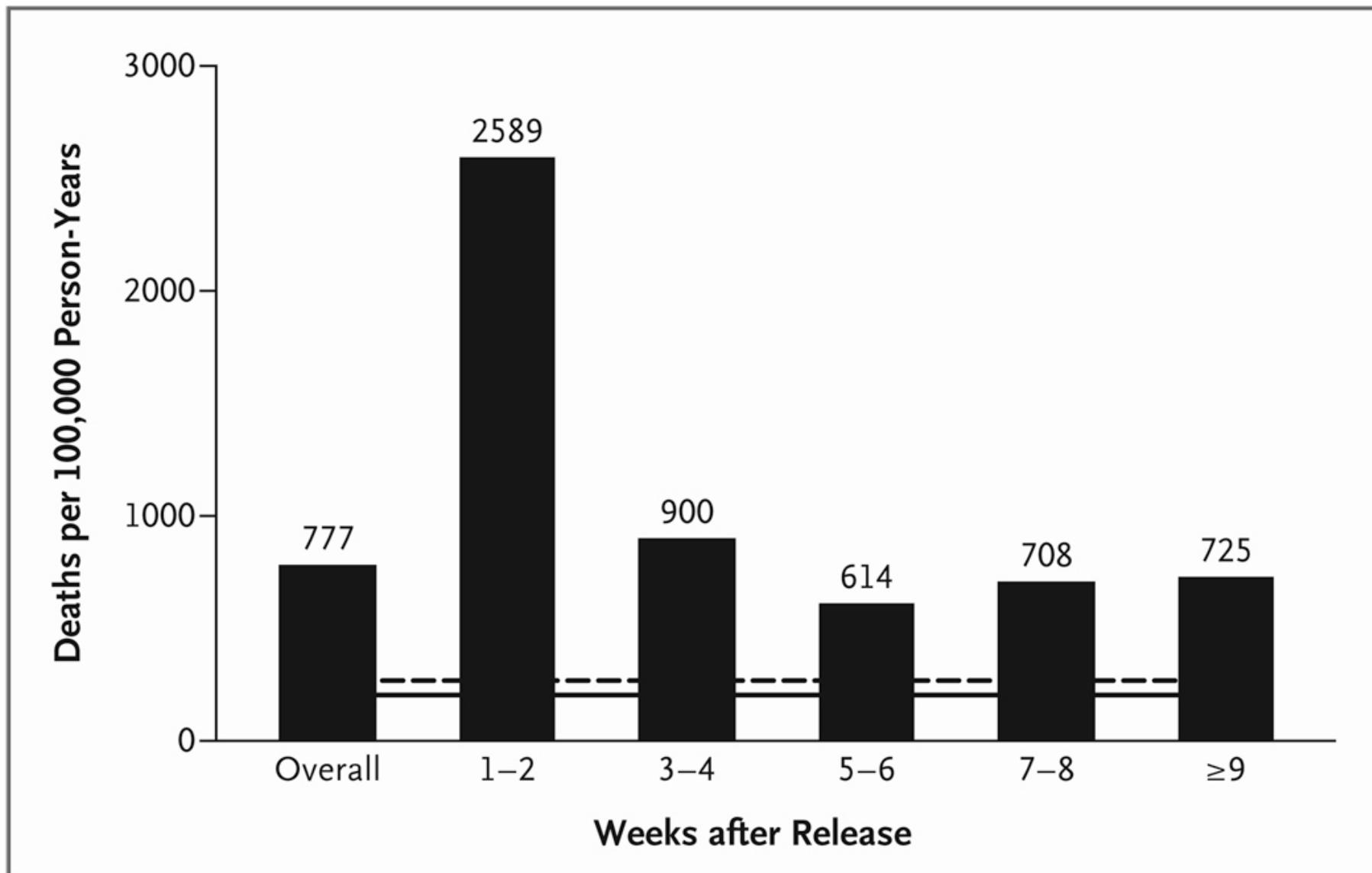
# **Pharmacotherapy for Opioid Use Disorder**

Sarah E. Wakeman, MD  
Medical Director,  
Substance Use Disorder Initiative  
Massachusetts General Hospital

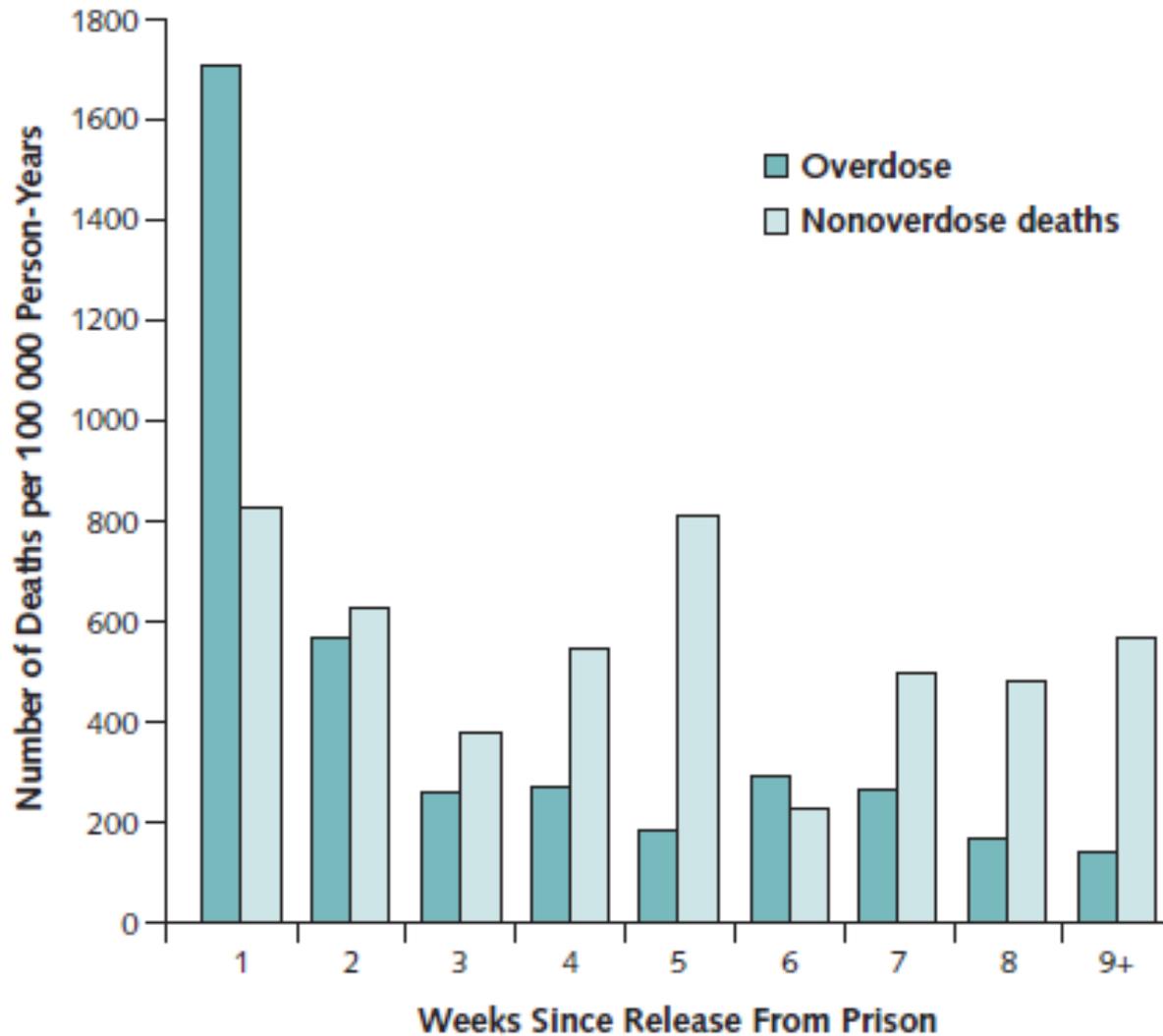
# Epidemic of opioid overdose deaths



# 129 x higher risk OD death after release



*Figure. Mortality rate, by week since release, for overdose and all other (nonoverdose) causes of death.*



# Addiction & Incarceration

- 48% of federal prisoners incarcerated for drug offenses
- 85% substance-involved
  - 1.5 million meet DSM criteria for substance use disorder
  - 458,000 history of SUD, under the influence, or crime committed to obtain money to buy drugs
- In 2006, alcohol and other drugs were involved in:
  - 78% of violent crimes
  - 83% of property crimes
  - 77% of public order, immigration or weapons offenses and probation/parole violations

# SUD Treatment Within Corrections

- Among state prisoners with a drug use disorder in 2004:
  - 0.8% received detoxification services
  - 0.3% received maintenance pharmacotherapy
  - 6.5% received counseling by a professional
  - 9.5% received treatment in a residential facility

# Risk factors for overdose

- Reduced tolerance
- Mixing substances
- Using alone
- Lack of treatment
  - *Treatment of opioid use disorder with opioid agonist medications reduces opioid overdose risk by almost 90%*

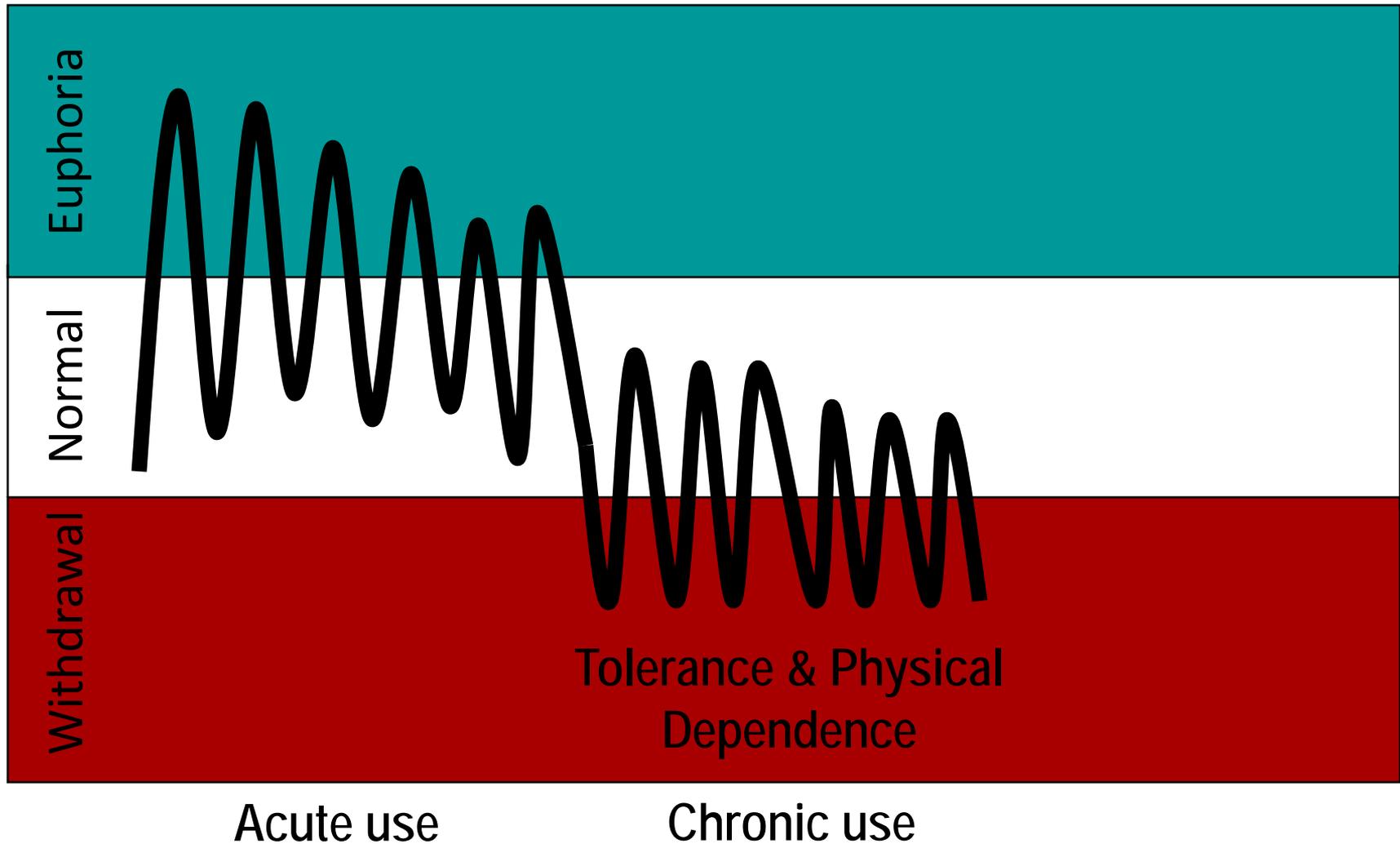
# Addiction



- “The question is frequently asked: Why does a man become a drug addict? The answer is that he usually does not intend to. [The drug] wins by default. I tried it as a matter of curiosity... I ended up hooked. You don’t decide to be an addict. One morning you wake up sick and you’re an addict. ”

William S. Burroughs, *Junky* (1953)

# Natural History of Opioid Use Disorder



**“When you can stop you don't want to, and when you want to stop, you can't.”**

Luke Davies, *Candy*. 1998.

# Addiction

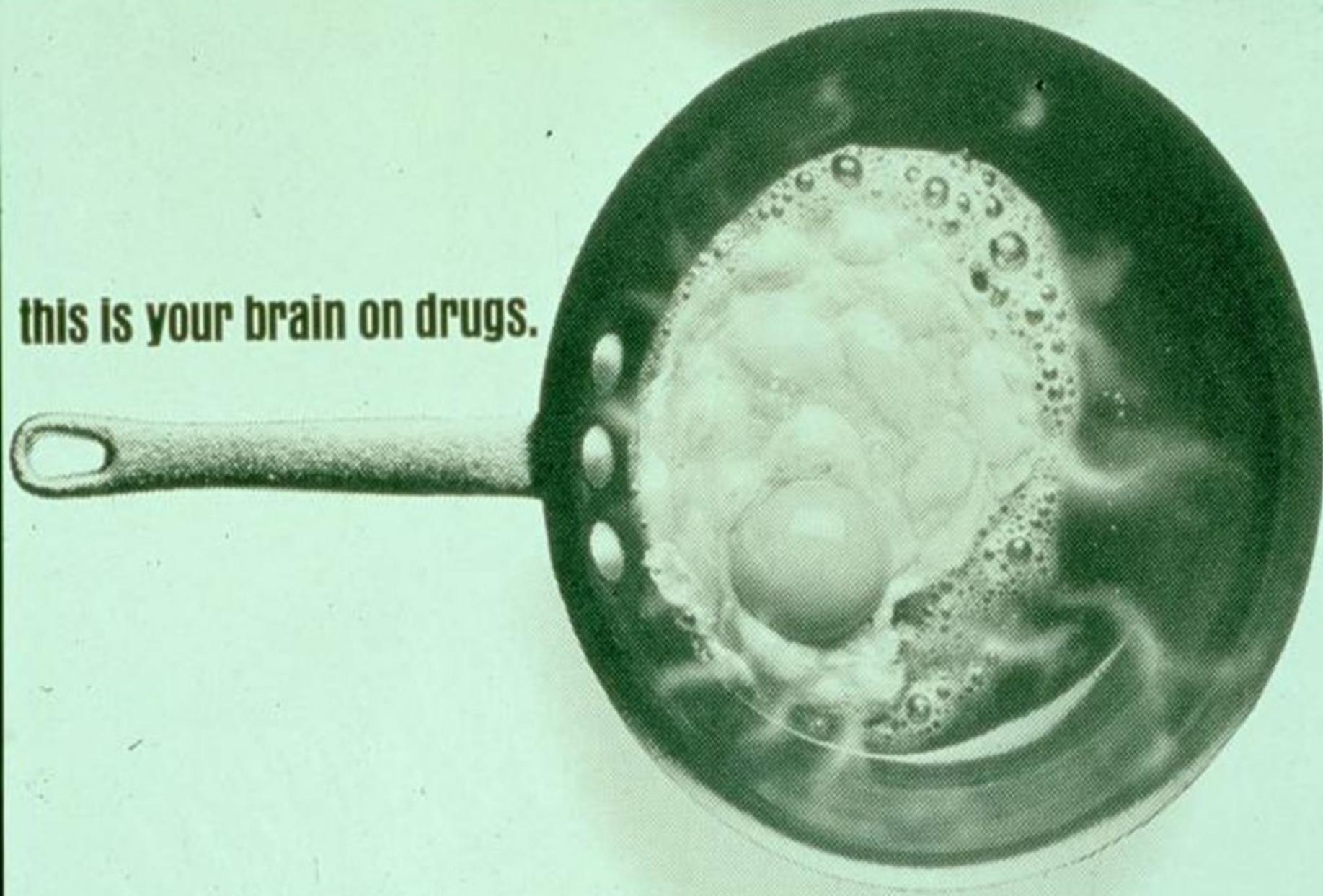


- Primary, chronic brain disease characterized by compulsive drug seeking and use *despite harmful consequences*
- Involves cycles of relapse and remission
- 40-60% genetic
- Without treatment addiction is progressive and can result in disability or premature death

American Society of Addiction Medicine. April 12, 2011. [www.asam.org](http://www.asam.org)

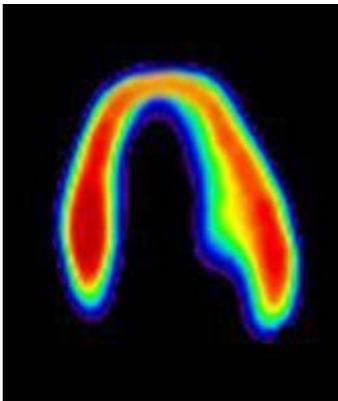
NIDA. August, 2010. <http://www.drugabuse.gov/publications/science-addiction>

**this is your brain on drugs.**

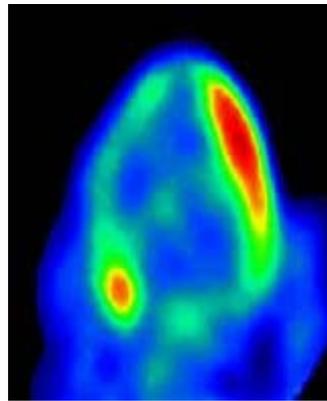


# Addiction Changes Brain Structure and Function

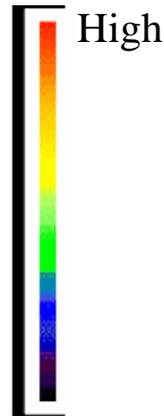
Decreased Heart Metabolism in Coronary Artery Disease



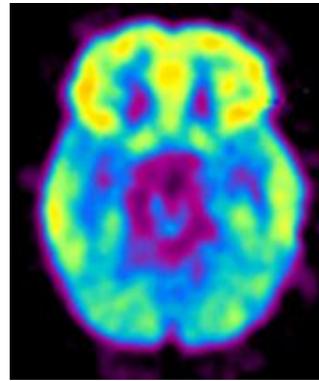
Healthy heart



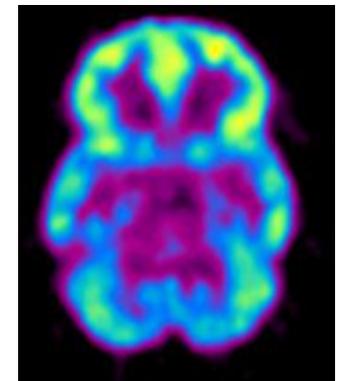
Diseased Heart



Decreased Brain Metabolism in Addiction



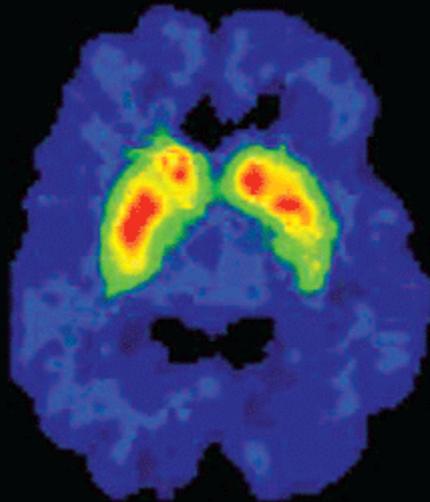
Healthy Brain



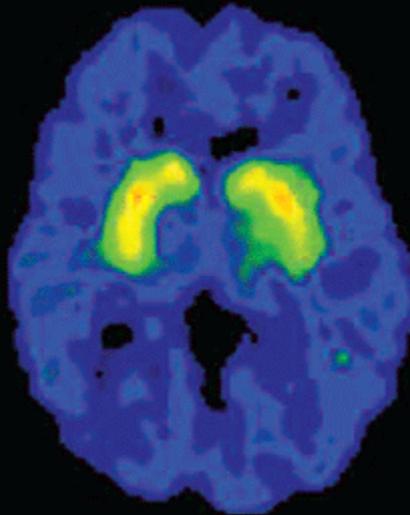
Diseased Brain

# Visualizing Recovery

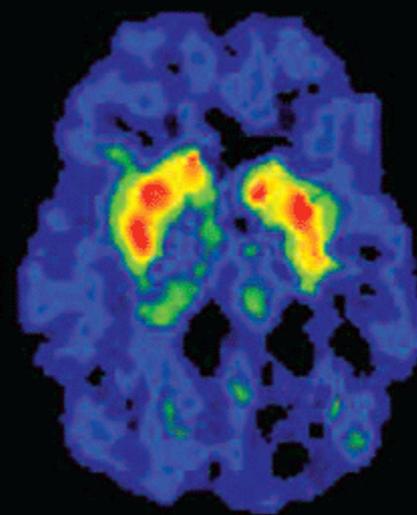
## BRAIN RECOVERY WITH PROLONGED ABSTINENCE



**Healthy Person**



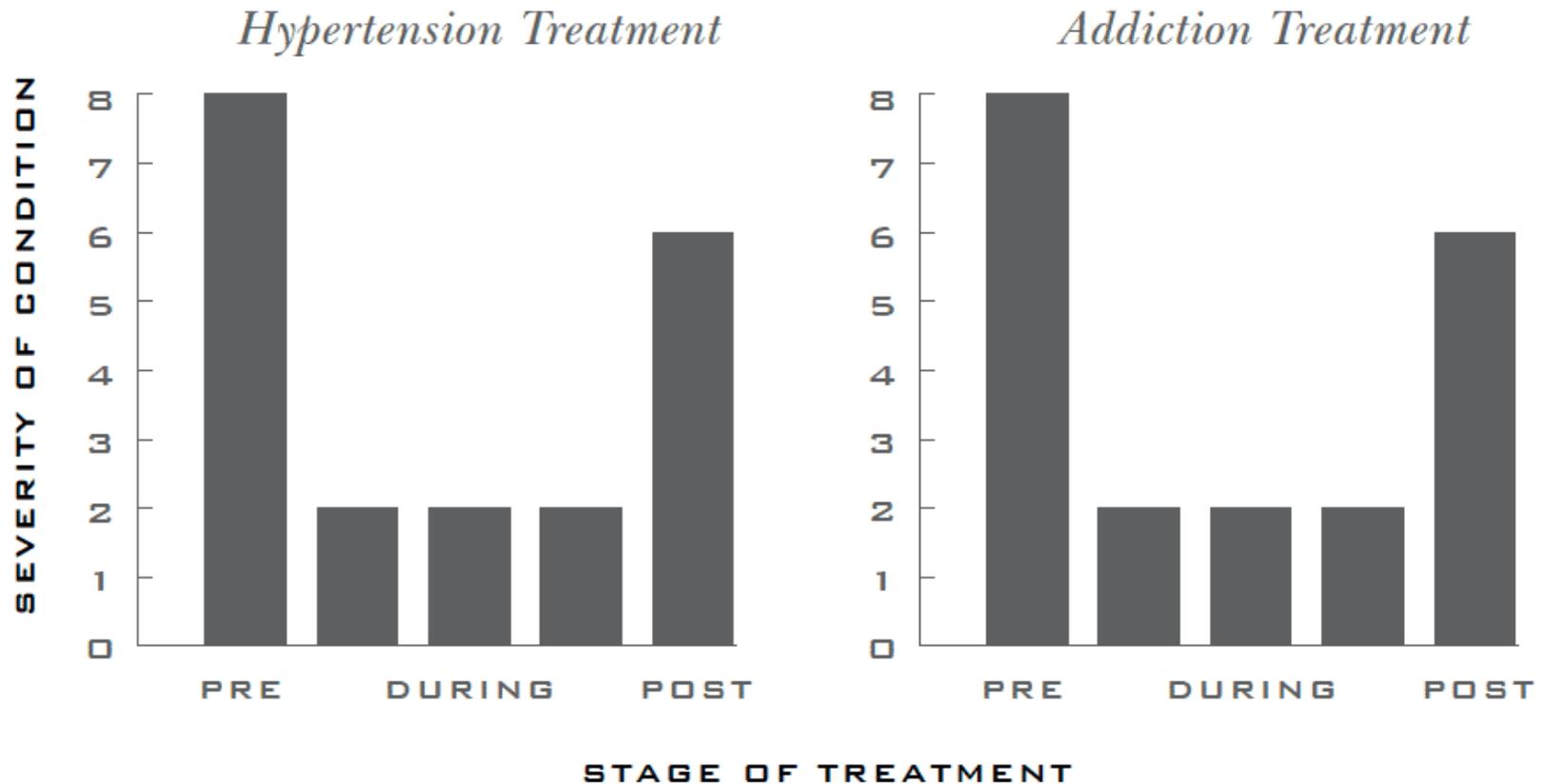
**METH Abuser  
1 month abstinence**



**METH Abuser  
14 months abstinence**

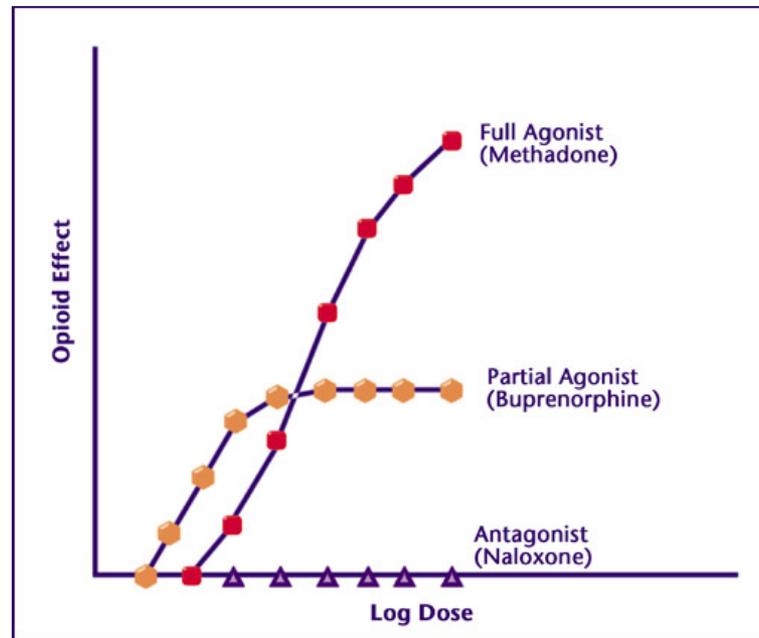
# A Treatable Disease

WHY IS ADDICTION TREATMENT EVALUATED DIFFERENTLY?  
BOTH REQUIRE ONGOING CARE



# Pharmacological Treatments

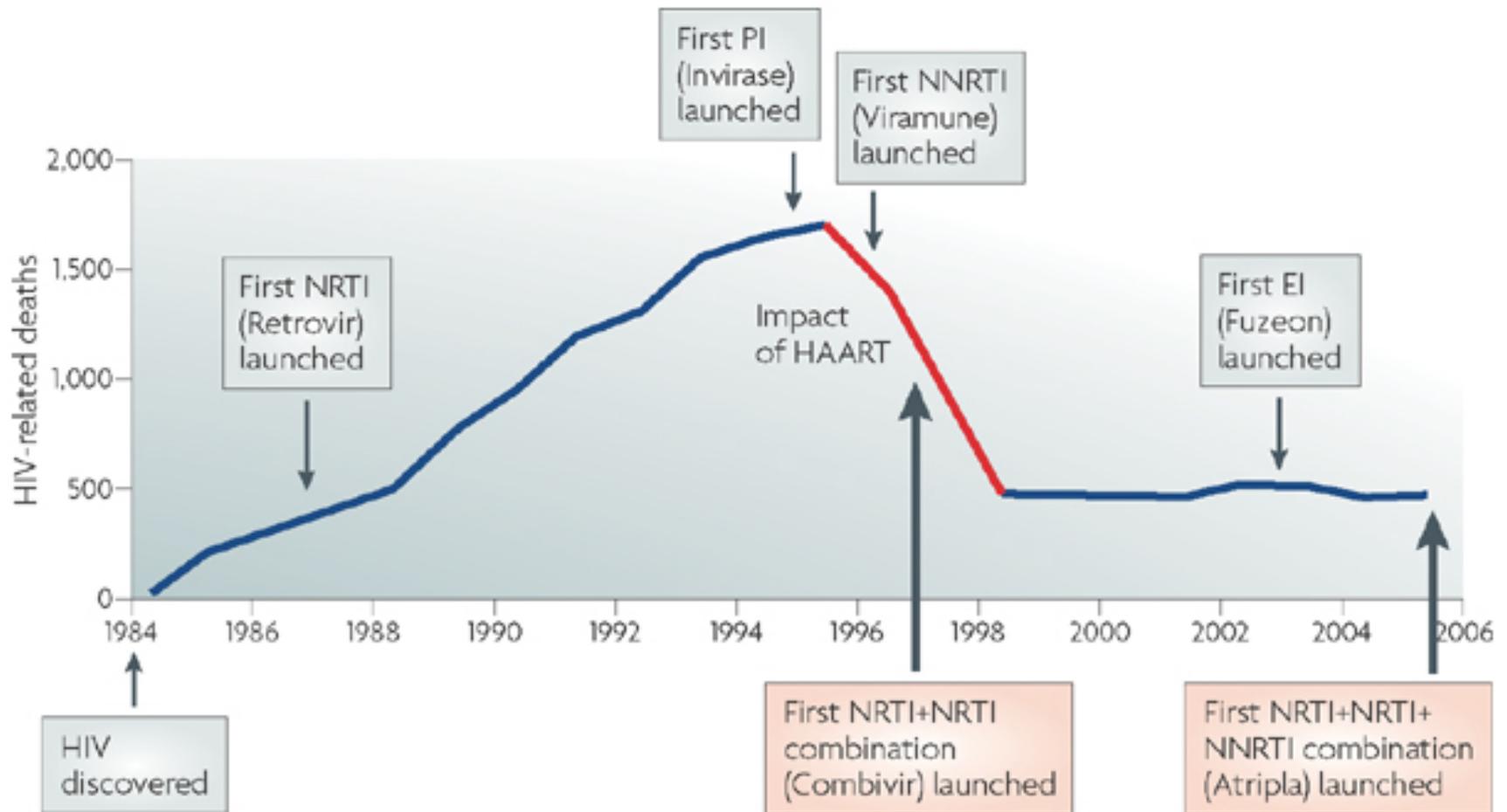
- Full opioid agonist: methadone
- Partial opioid agonist: buprenorphine
- Opioid antagonist: naltrexone



# Pharmacological Treatments

“What it comes down to is that we take care of the pharmacological problems, leaving the addict, and everyone else, free to turn his attention to other problems. It does not strike me as relevant whether these patients get off Methadone. Some may want to and that’s fine. What is relevant is that a treatment can be developed so that the addict can become a socially useful citizen, happy in himself and in society.”

# Medication Saves Lives



# Medication Saves Lives

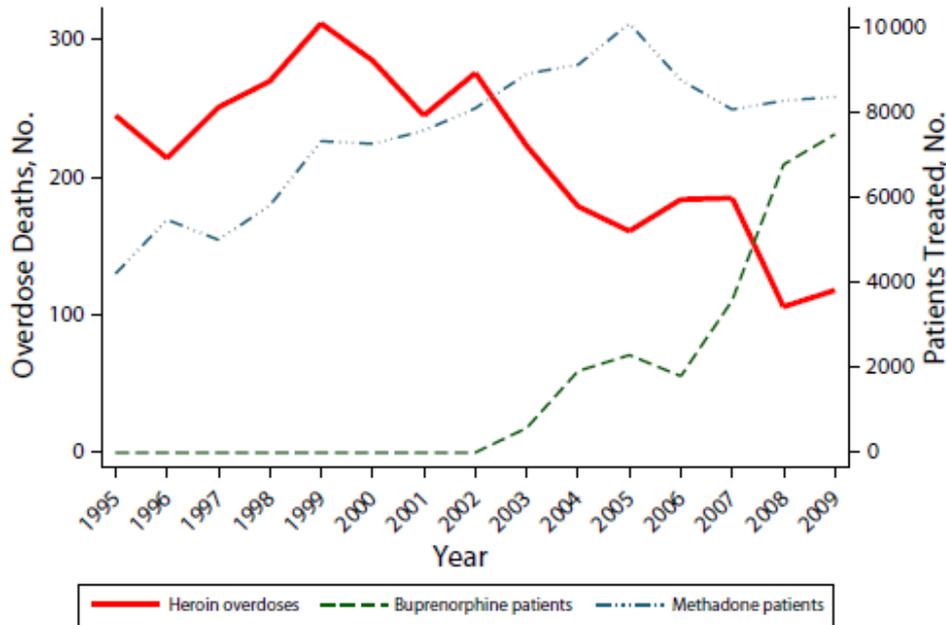
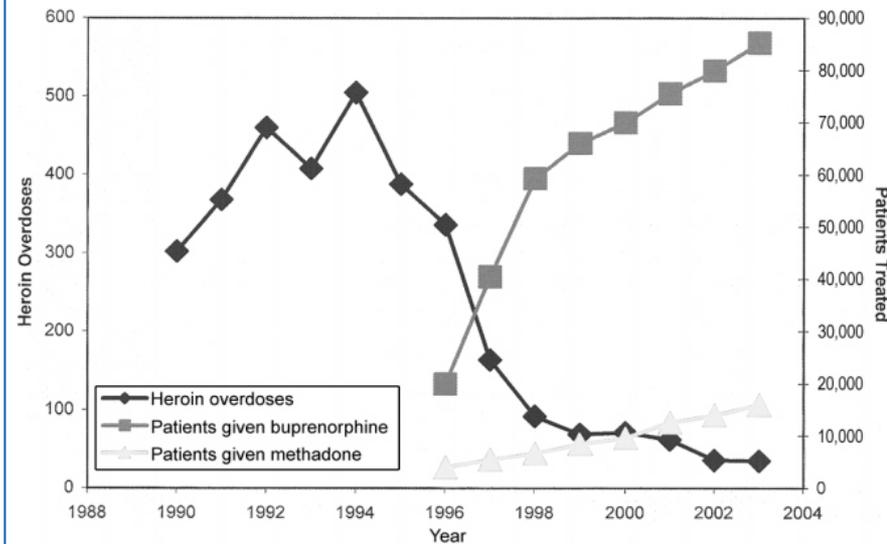


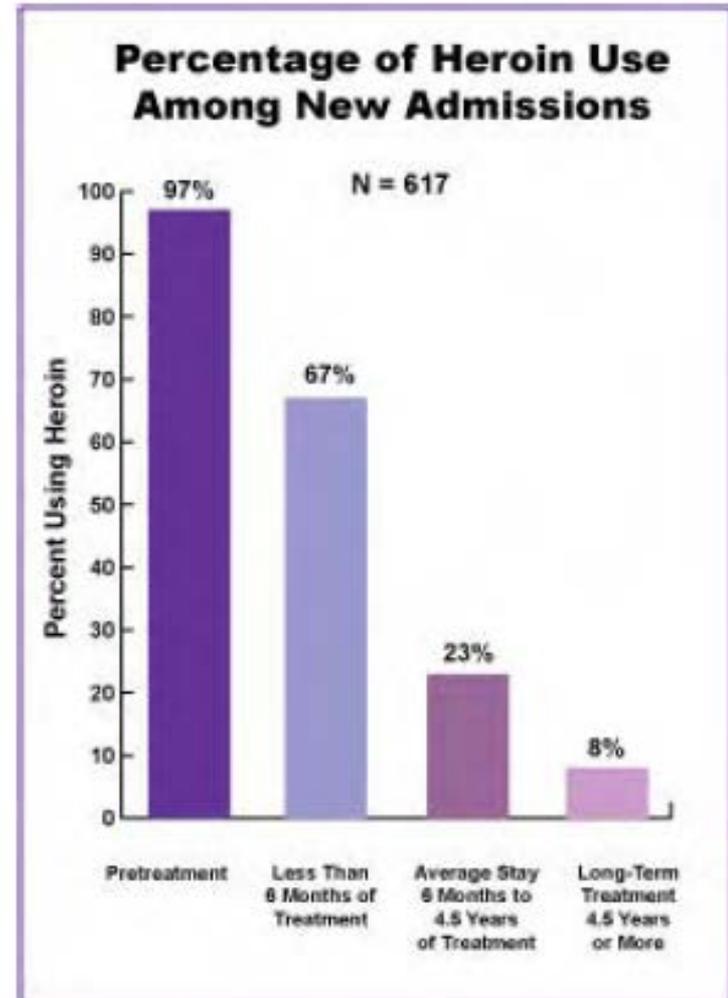
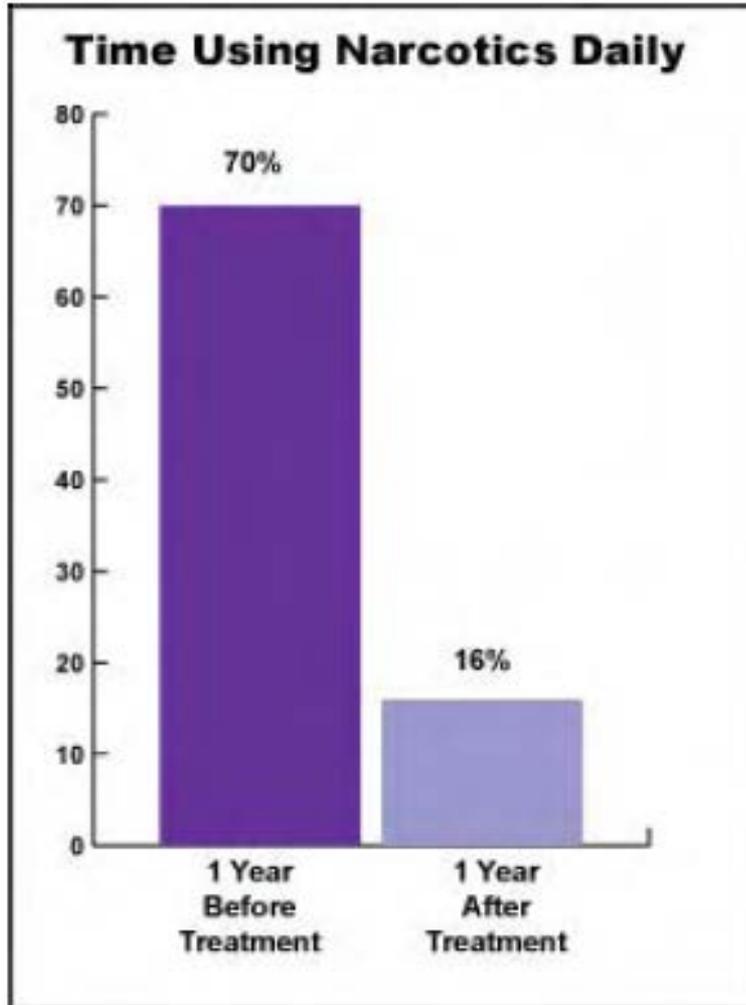
FIGURE 1—Heroin overdose deaths and opioid agonist treatment: Baltimore, MD, 1995–2009.

Maryland: 50% reduction in overdose death with opioid agonist treatment

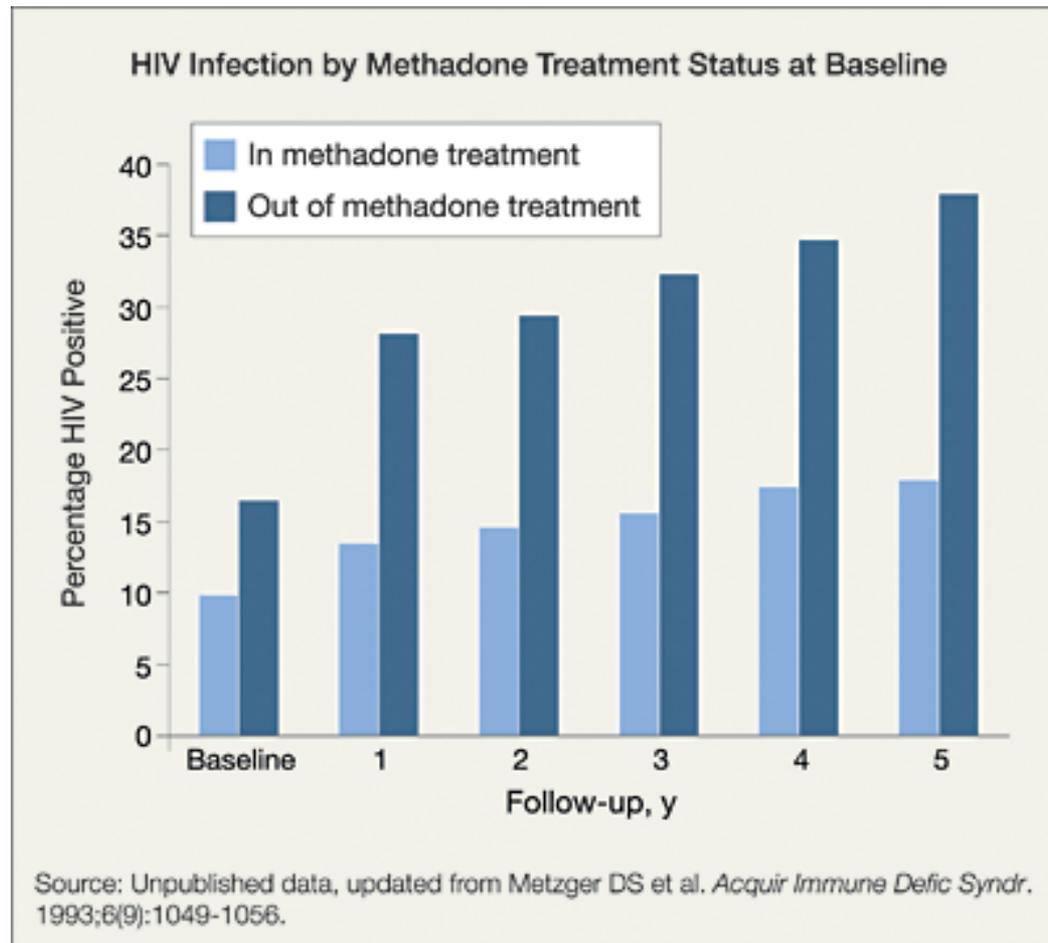


France: 79% reduction in overdose death with opioid agonist treatment

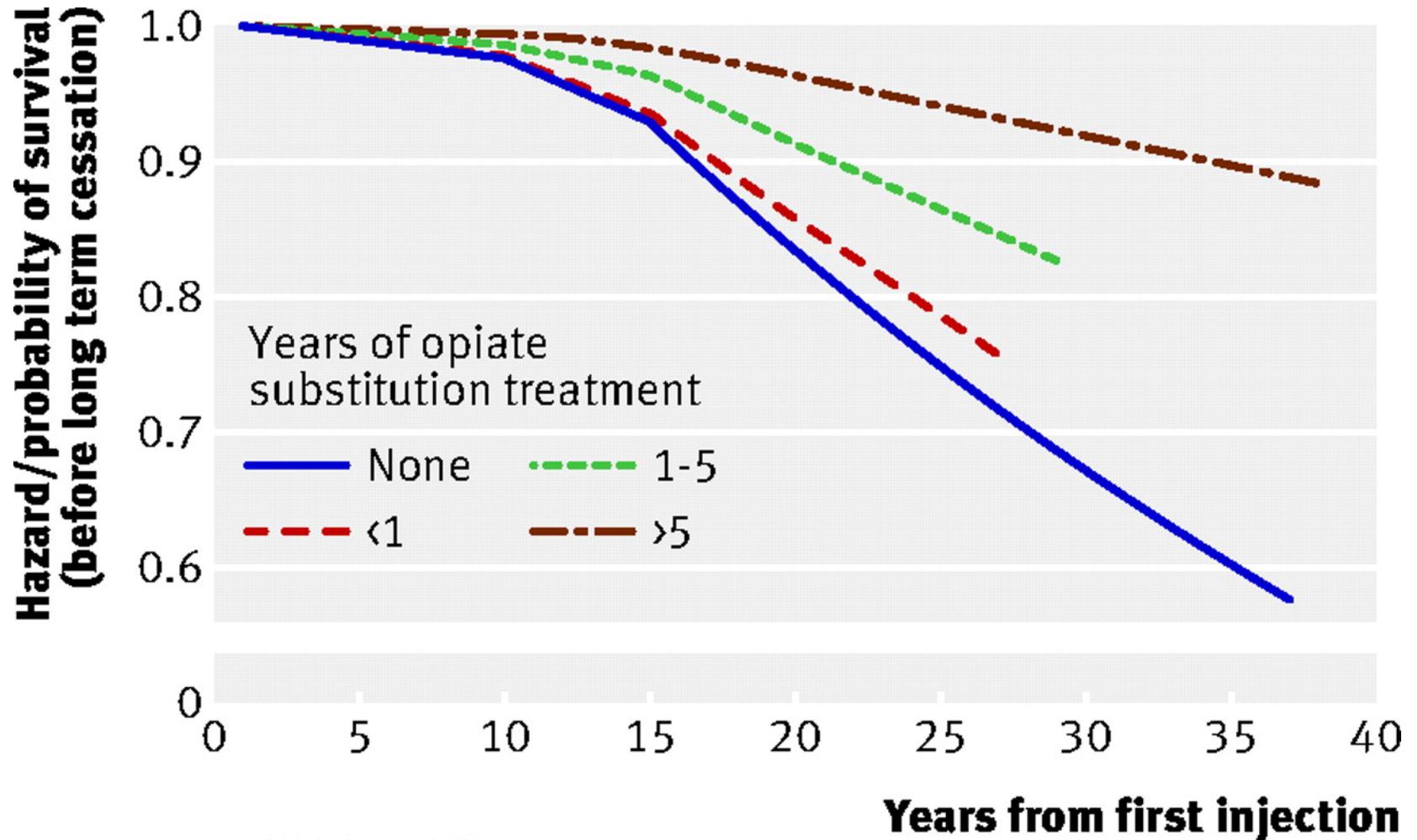
# Methadone Reduces Heroin Use



# Methadone Reduces HIV Infection



# Opioid Agonist Therapy Reduces Death

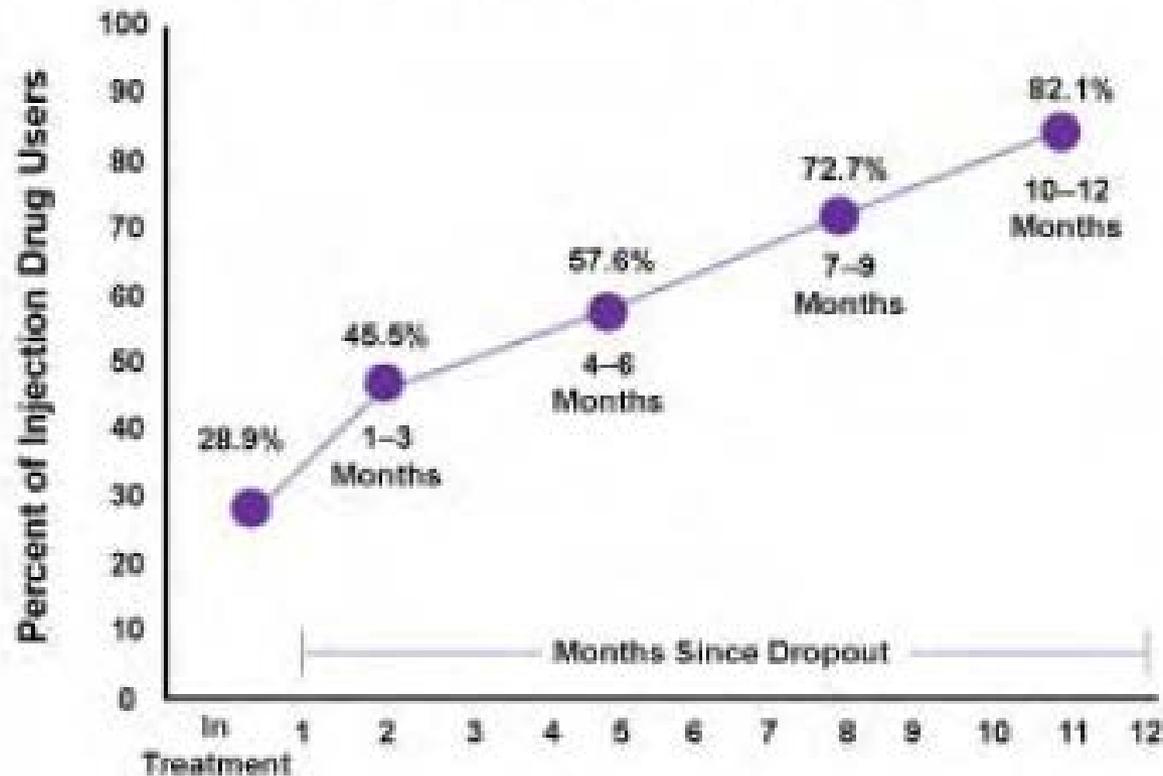


Kimber J et al. BMJ 2010;341:bmj.c3172

# Other Benefits of Opioid Agonist Tx

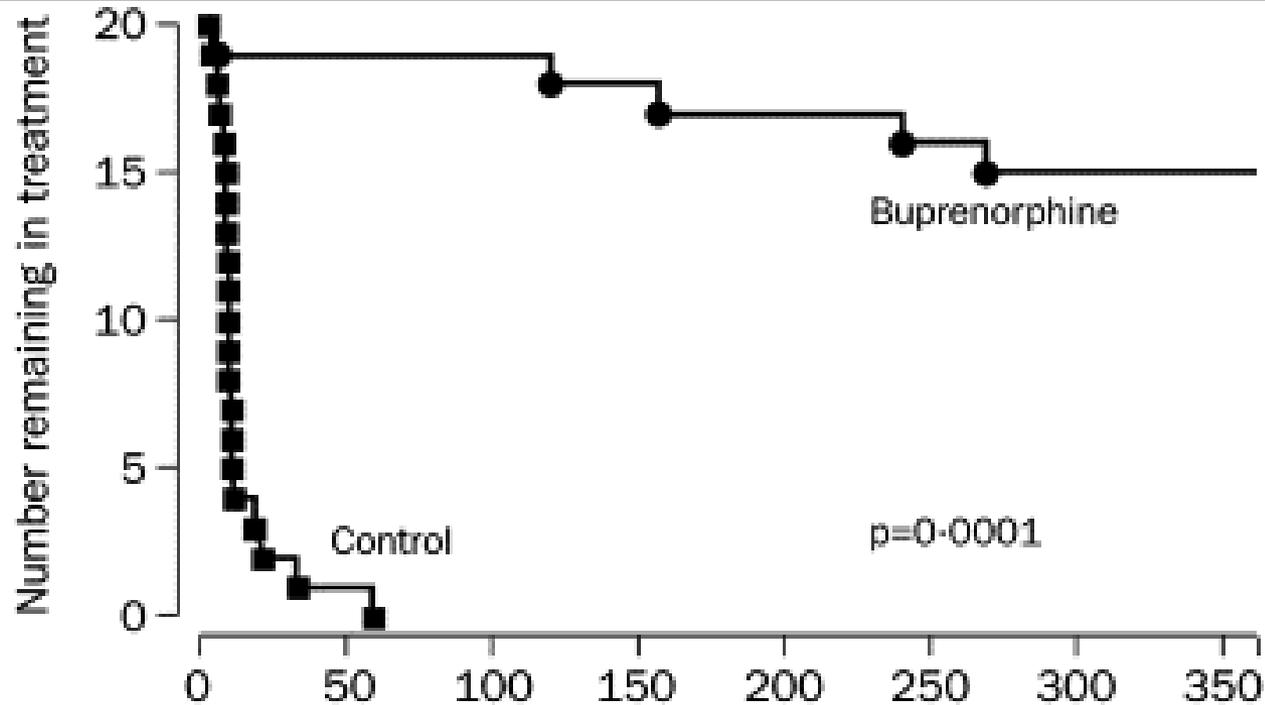
- Reduction in the use of illicit drugs
- Reduction in criminal activity
- Reduction in needle sharing
- Reduction in HIV infection rates and transmission
- Cost-effective
- Reduction in commercial sex work
- Reduction in the number of reports of multiple sex partners
- Improvements in social health and productivity
- Improvements in health conditions
- Retention in addiction treatment
- Reduction in suicide
- Reduction in lethal overdose

## Rapid Return to Injection Drug Use Following Premature Termination of Methadone Maintenance Treatment



(N = 388 Male Patients)

# Poor Outcomes Without Maintenance



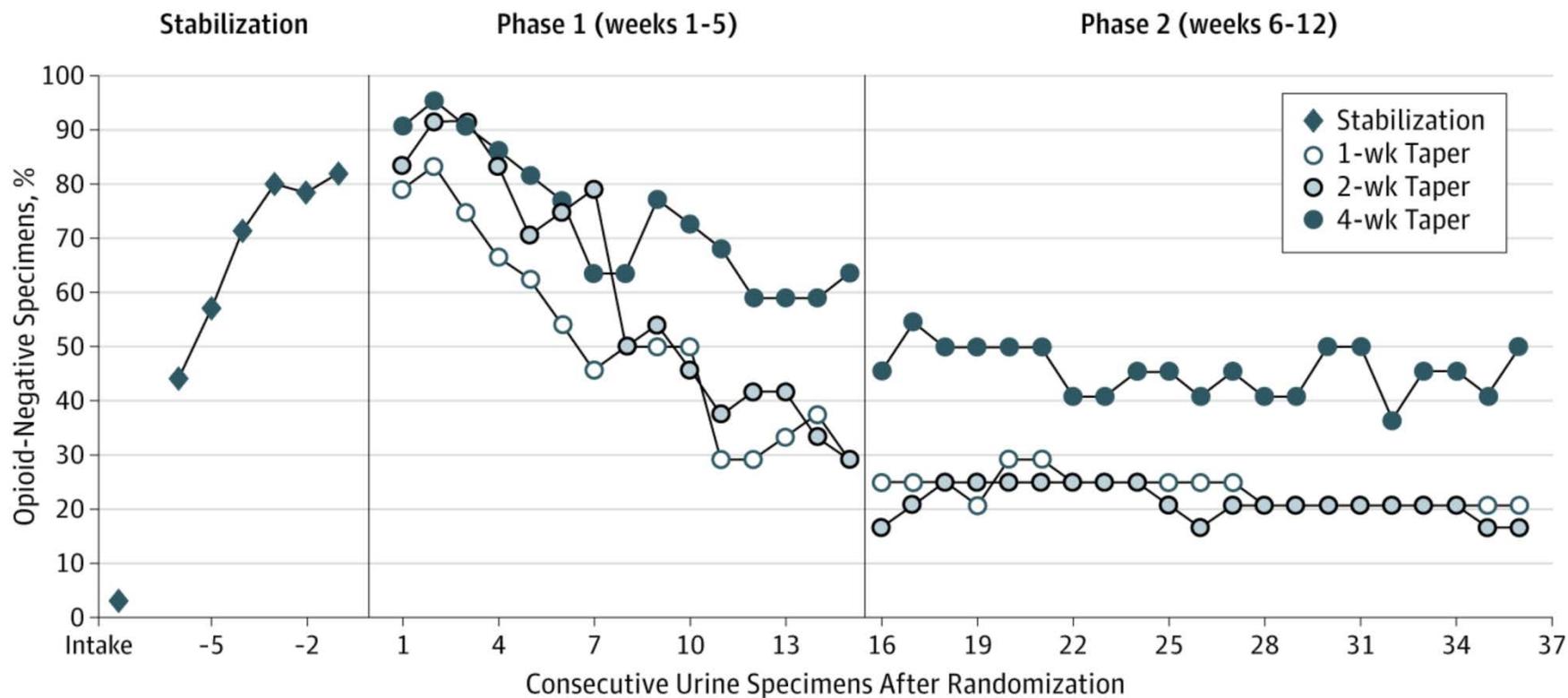
## Treatment group:

- Highly significant ASI reduction
- 75% negative tox screens
- 75% retained in treatment
- No deaths

## Control group:

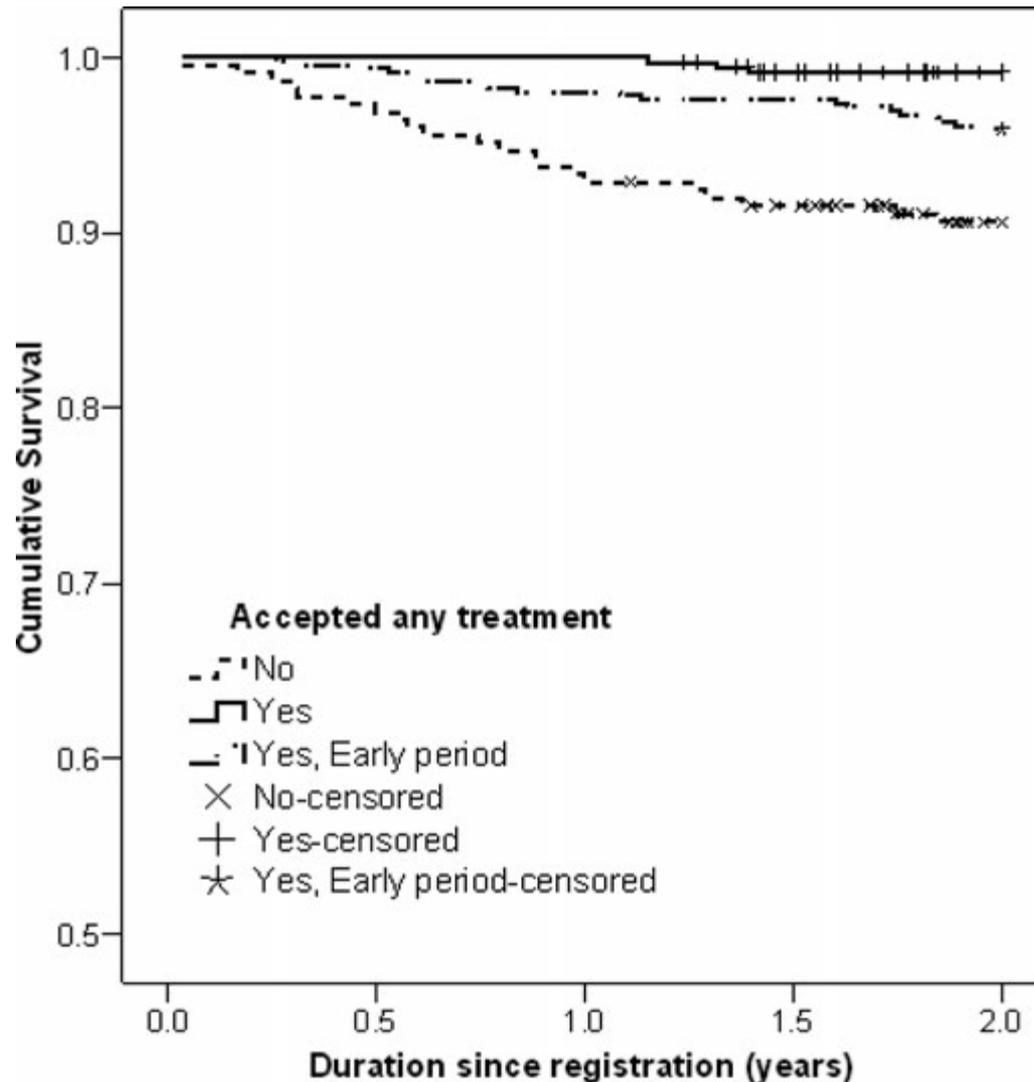
- 0% retained in treatment
- 20% died**

# Relapse Common Following Taper

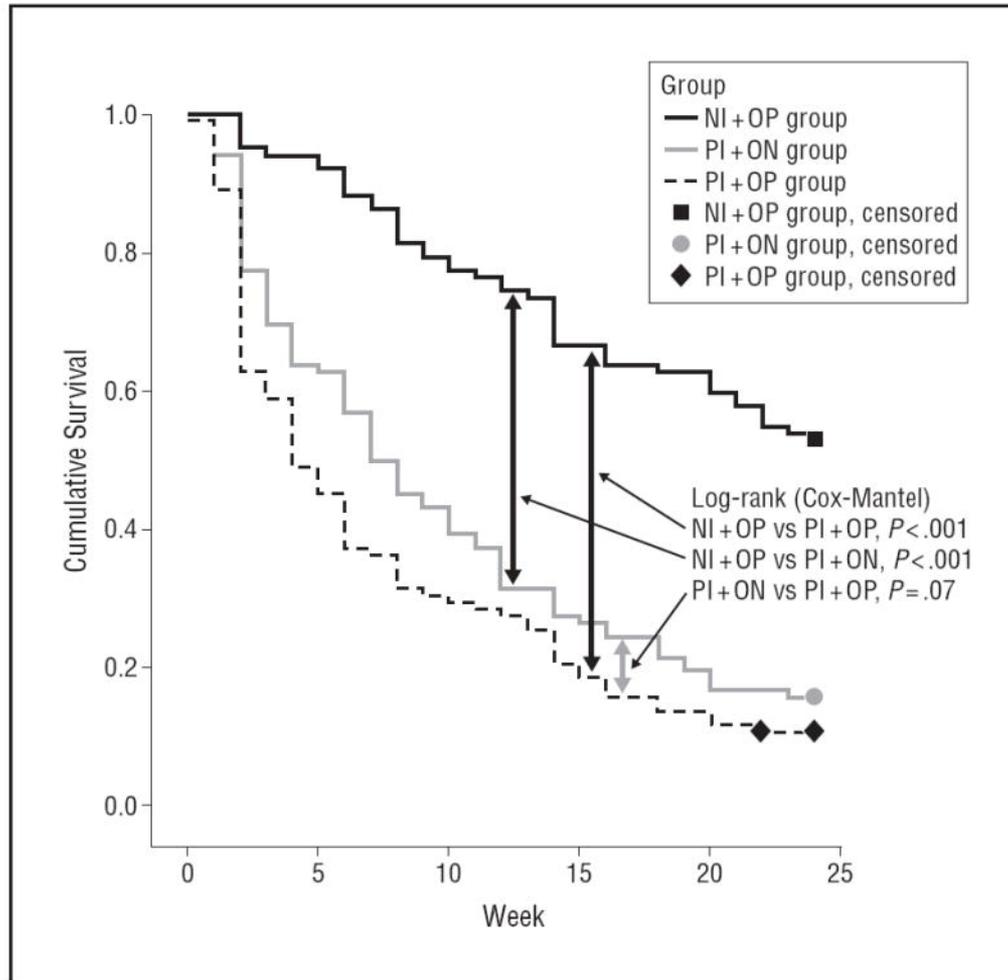


Sigmon et al. *JAMA Psychiatry*. 2013;70(12):1347-1354.

# Risk of Death 10x Higher on Waiting List



# Antagonist therapy: Naltrexone



# Cost Savings of Treatment

- Methadone maintenance patients health care costs 50%-62% lower than those not on MMT
- Adherence to buprenorphine associated with lower outpatient, inpatient, ED, and total healthcare costs
- Buprenorphine treatment significantly reduces total healthcare costs compared to no treatment (\$13,578 vs \$31,055)

McCarty et al. Drug Alcohol Depend. 2010 Oct 1;111(3):235-40.

Tkacz J et al. JSAT 2014. 46 (2014) 456-462.

Lynch FL et al. Addict Sci Clin Pract. 2014; 9(1): 16.

## The effectiveness of opioid maintenance treatment in prison settings: a systematic review

Dagmar Hedrich<sup>1</sup>, Paula Alves<sup>1,2</sup>, Michael Farrell<sup>3</sup>, Heino Stöver<sup>4</sup>, Lars Möller<sup>5</sup> & Soraya Mayet<sup>6</sup>

- 21 studies, 6 experimental, 15 observational
- Treatment during incarceration → reduced heroin use, injection, and syringe sharing during incarceration
- Pre-release treatment → increased treatment entry, retention, & reduced post-release heroin use

## **A randomized clinical trial of methadone maintenance for prisoners: findings at 6 months post-release**

Michael S. Gordon<sup>1</sup>, Timothy W. Kinlock<sup>1,2</sup>, Robert P. Schwartz<sup>1,3</sup> & Kevin E. O'Grady<sup>4</sup>

- Compared counseling alone TO counseling + passive referral to methadone OR counseling + initiation of methadone during incarceration
- Counseling + methadone initiation significantly increased treatment retention ( $P = 0.0001$ ), decreased opioid-positive toxicology ( $P = 0.002$ ), and reduced days of involvement in self-reported heroin use and criminal activity

## Engagement with opioid maintenance treatment and reductions in crime: a longitudinal national cohort study

Anne Bukten<sup>1</sup>, Svetlana Skurtveit<sup>1,2</sup>, Michael Gossop<sup>3</sup>, Helge Waal<sup>1</sup>, Per Stangeland<sup>1</sup>, Ingrid Havnes<sup>1,4</sup> & Thomas Clausen<sup>1</sup>

- Looked at rates of crime prior during between and after treatment with methadone
- Community population, lots of involvement with CJS
  - 3221 participants, 4222 convictions
- Methadone treatment reduced crime by more than half
- Those in continuous treatment, 2/3 reduction



# NIH Public Access

## Author Manuscript

*Drug Alcohol Depend.* Author manuscript; available in PMC 2010 January 1.

Published in final edited form as:

*Drug Alcohol Depend.* 2009 January 1; 99(1-3): 222–230. doi:10.1016/j.drugalcdep.2008.08.006.

## **Buprenorphine and Methadone Maintenance in Jail and Post-Release: A Randomized Clinical Trial**

Stephen Magura<sup>a,b,\*</sup>, Joshua D. Lee<sup>c</sup>, Jason Hershberger<sup>d</sup>, Herman Joseph<sup>b</sup>, Lisa Marsch<sup>b</sup>, Carol Shropshire<sup>e</sup>, and Andrew Rosenblum<sup>b</sup>

- Compared buprenorphine to methadone
- Post-release treatment retention higher in buprenorphine group (48% vs. 14%,  $p < .001$ )
- Prior to release, buprenorphine patients more likely to plan to continue treatment in community (93% vs. 44%,  $p < .001$ )
- No post-release differences in self-reported relapse to illicit opioid use, self-reported re-arrests, self-reported severity of crime or re-incarceration in jail
- Limitation: low methadone dosages in trial (30 mg/day on average)



Published in final edited form as:

*Am J Addict.* 2010 ; 19(5): 422–432. doi:10.1111/j.1521-0391.2010.00070.x.

## **A Randomized Trial of Oral Naltrexone for Treating Opioid-Dependent Offenders**

Donna M. Coviello, PhD<sup>1</sup>, James W. Cornish, MD<sup>1,2</sup>, Kevin G. Lynch, PhD<sup>1</sup>, Arthur I. Alterman, PhD<sup>1</sup>, and Charles P. O'Brien, MD, PhD<sup>1,2</sup>

- 111 individuals under correctional supervision in the community in outpatient counseling +/- naltrexone
- Only 32% NTX and 29% of controls completed 6 months of treatment
- Slightly more negative opioid tox screens in those retained on NTX



Published in final edited form as:

*Subst Abus.* 2012 ; 33(1): 48–59. doi:10.1080/08897077.2011.609438.

## **A Multi-Site Pilot Study of Extended-Release Injectable Naltrexone Treatment for Previously Opioid-Dependent Parolees and Probationers**

D.M. Coviello<sup>1</sup>, J.W. Cornish<sup>1,2</sup>, K.G. Lynch<sup>1</sup>, T.Y. Boney<sup>1</sup>, C.A. Clark<sup>1</sup>, J.D. Lee<sup>3</sup>, P.D. Friedmann<sup>4</sup>, E.V. Nunes<sup>5</sup>, T.W. Kinlock<sup>6,7</sup>, M.S. Gordon<sup>6</sup>, R.P. Schwartz<sup>6</sup>, E.S. Nuwayser<sup>8</sup>, and C.P. O'Brien<sup>1,2</sup>

- 40% completed all 6 injections
- Overall follow-up across sites was 66%
- Study retention much better in completers
- Opioid use and incarceration much lower among treatment completers
  - 4% of completers with opioid positive tox vs 44% of the non-completers
  - 50% of non-completers re-incarcerated vs 15% completers

# Patient Selection

- All patients with opioid use disorder should be offered pharmacotherapy
- Choice of treatment should be based on:
  - Assessment of treatment needs
  - Prior treatment history
  - Evidence-based evaluation
  - Patient acceptance
  - Treatment availability
- Pros and cons exist for each type of treatment
  - Methadone vs buprenorphine vs naltrexone

# WHO Guidelines

- “Of all the treatments, opioid agonist maintenance treatment, combined with psychosocial assistance is most effective... psychosocial services should be made available to all patients, although those who do not take up the offer should not be denied effective pharmacological treatment.”

Guidelines for the Psychosocially Assisted Pharmacological Treatment of Opioid Dependence



# Long-Term Outcomes

- At Month 42:
  - 32% abstinent from opioids and not on agonist therapy
  - 30% in remission on opioid agonist therapy
  - 7.5% using illicit opioids while on agonist therapy
  - 31% relapsed to opioid use not on agonist therapy
- Medical management vs MM + counseling not associated with abstinence
- Engagement in agonist therapy significantly associated with abstinence
  - 80% on treatment were abstinent at month 42

# Integrating Pharmacotherapy into Drug Court

- Drug Court could be ideal setting for pharmacotherapy
  - Monitored, structured treatment, team-based care
- Considerations:
  - Clinician assessment and treatment plan
  - Ongoing monitoring and evaluation
  - Close communication with prescribing physician
- Relapse indicates need for treatment re-evaluation, not punishment

# Questions?

- [swakeman@partners.org](mailto:swakeman@partners.org)