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Complications, Conditions and Treatment of Cardiovascular Disease and Substance Use Disorders

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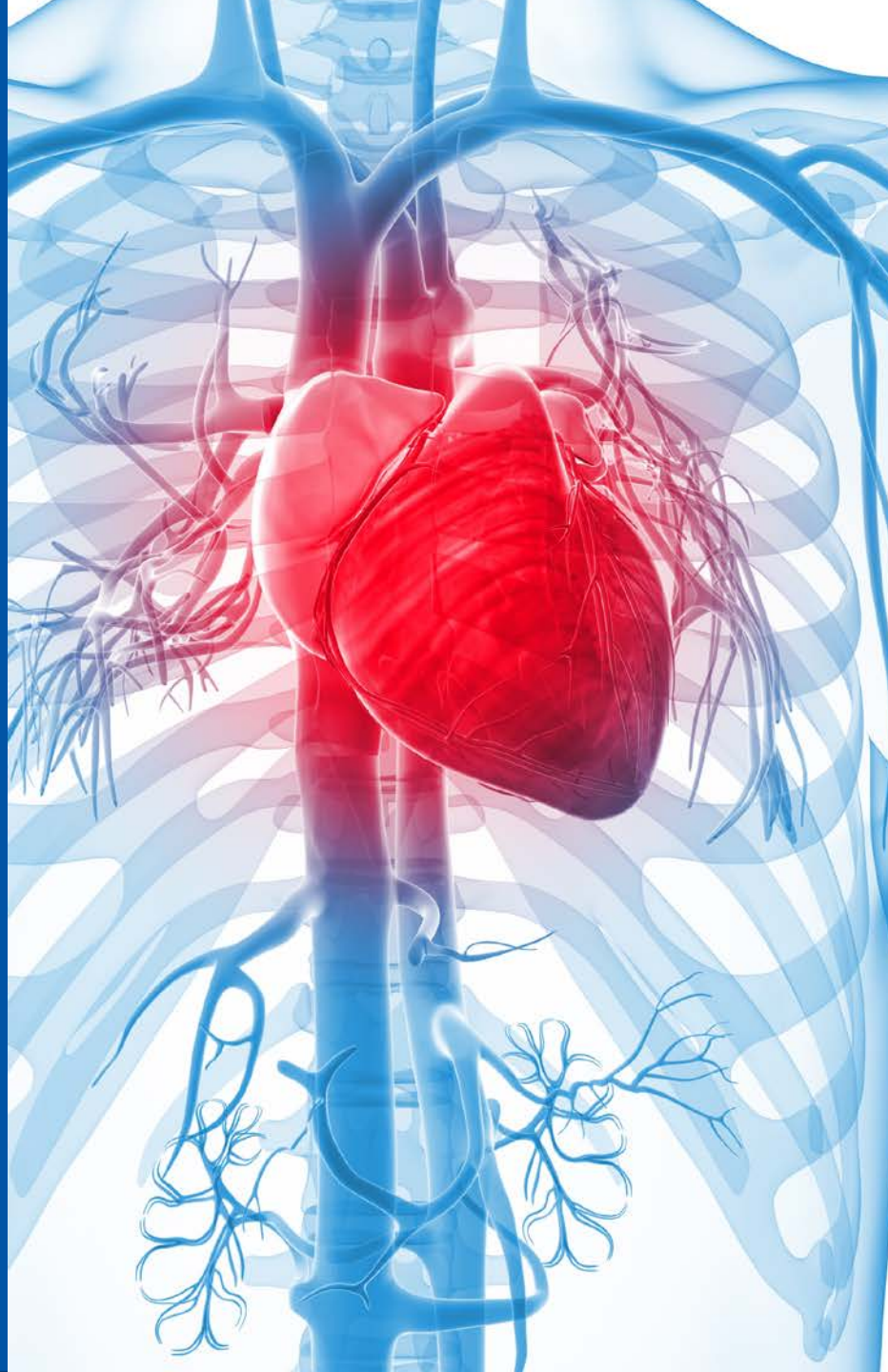

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Disclosures

None

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Education Need/Practice Gap

A major educational gap exists in the clinical knowledge and care management of cardiovascular risk in substance use disorders. Providers need to be aware of best practices to reduce cardiovascular risk in addiction and substance abuse.

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Learning Objectives

Upon completion of this learning activity, you will be able to:

1. Describe CV complications of opioid use disorder and other substance use disorders.

2 Describe pharmacotherapies for treatment of opioid use disorder.

3. Discuss strategies to integrate treatment of opioid use disorder in chronic disease management.

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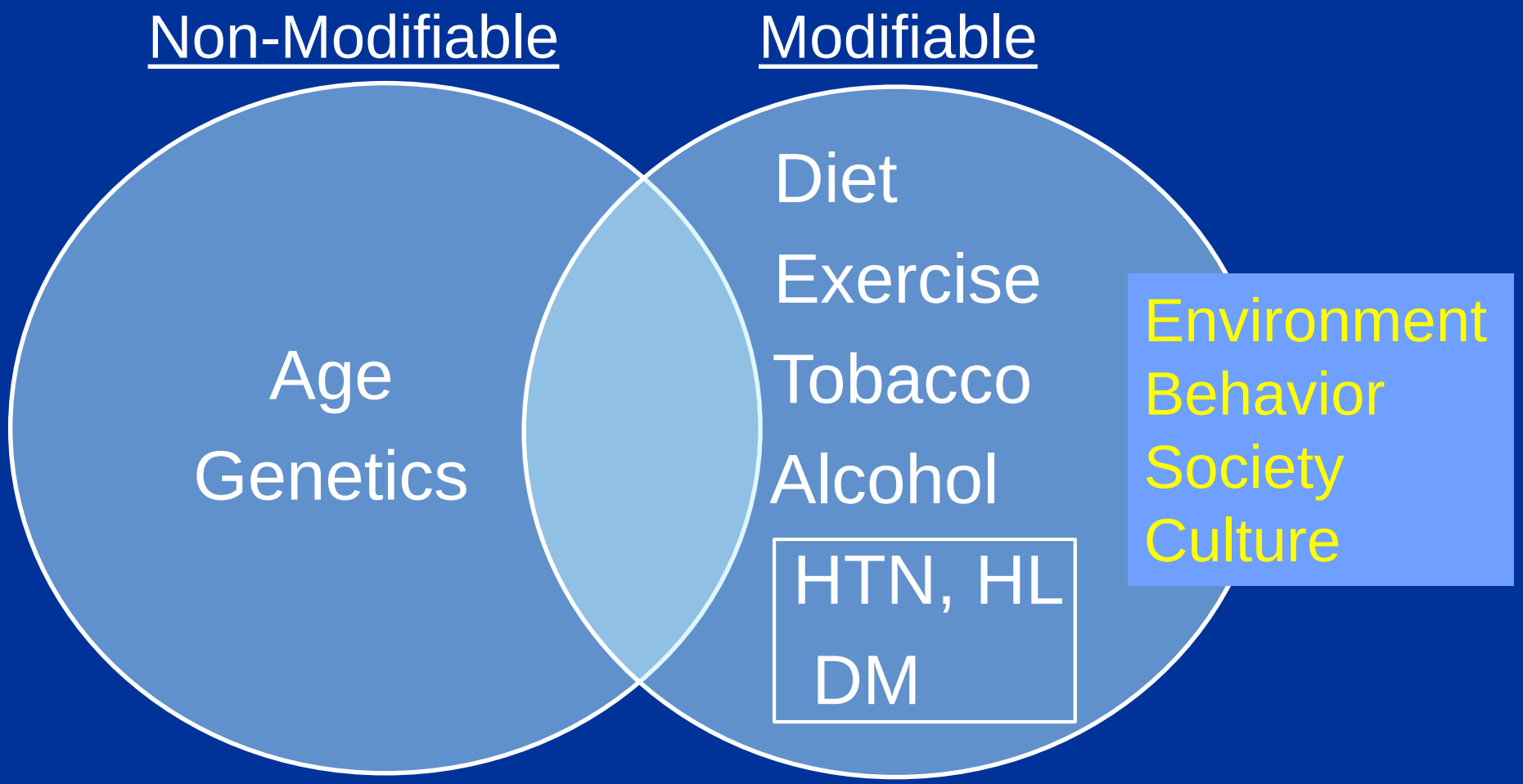
Expected Outcome

The desired change/result in practice is to improve care coordination and cardiovascular risk reduction approaches in addiction medicine.

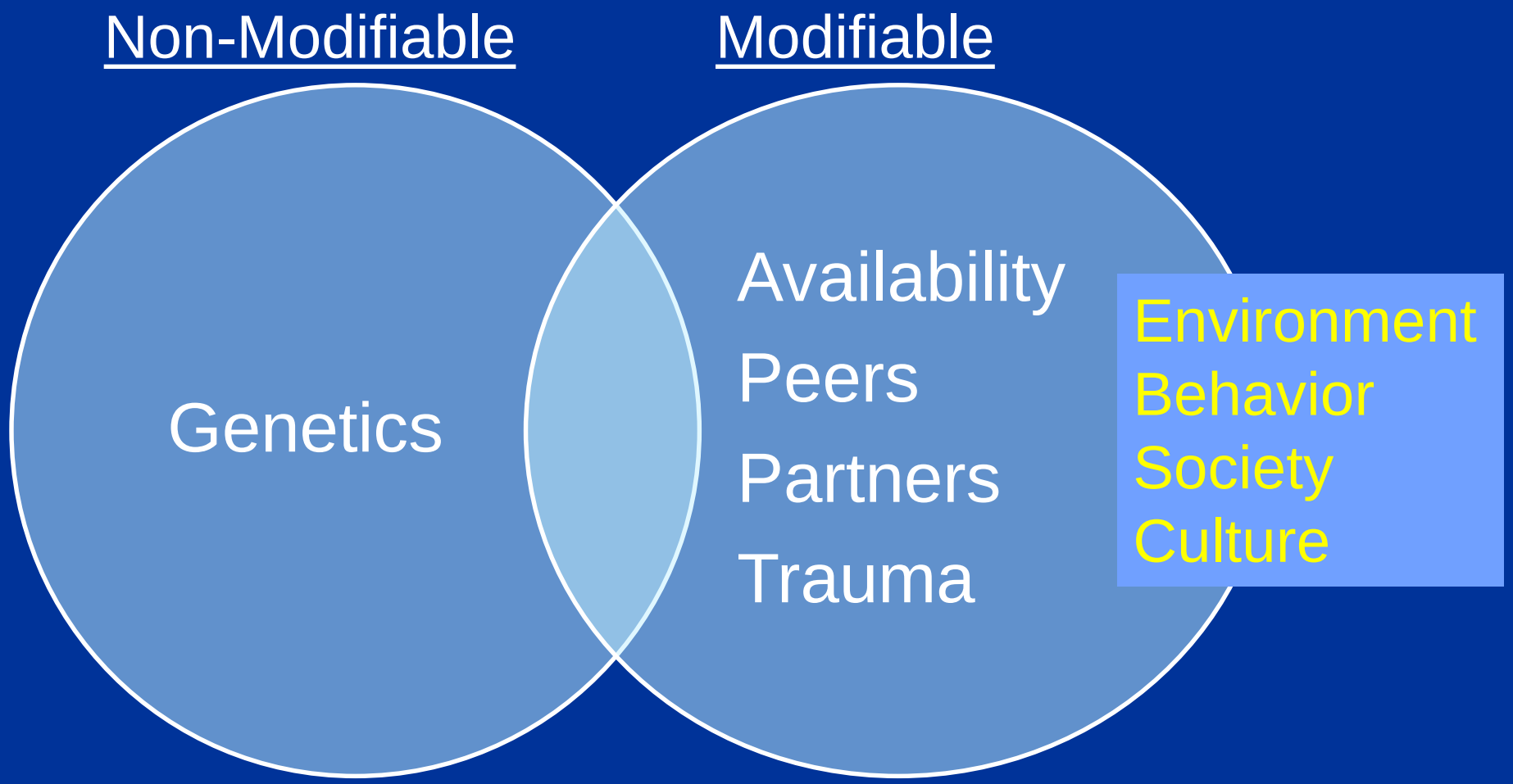
Outline

- Screening and diagnosis of substance use disorders
- Cardiovascular effects of stimulants
- Cardiovascular complications of opioid use disorder and treatment of opioid use disorder

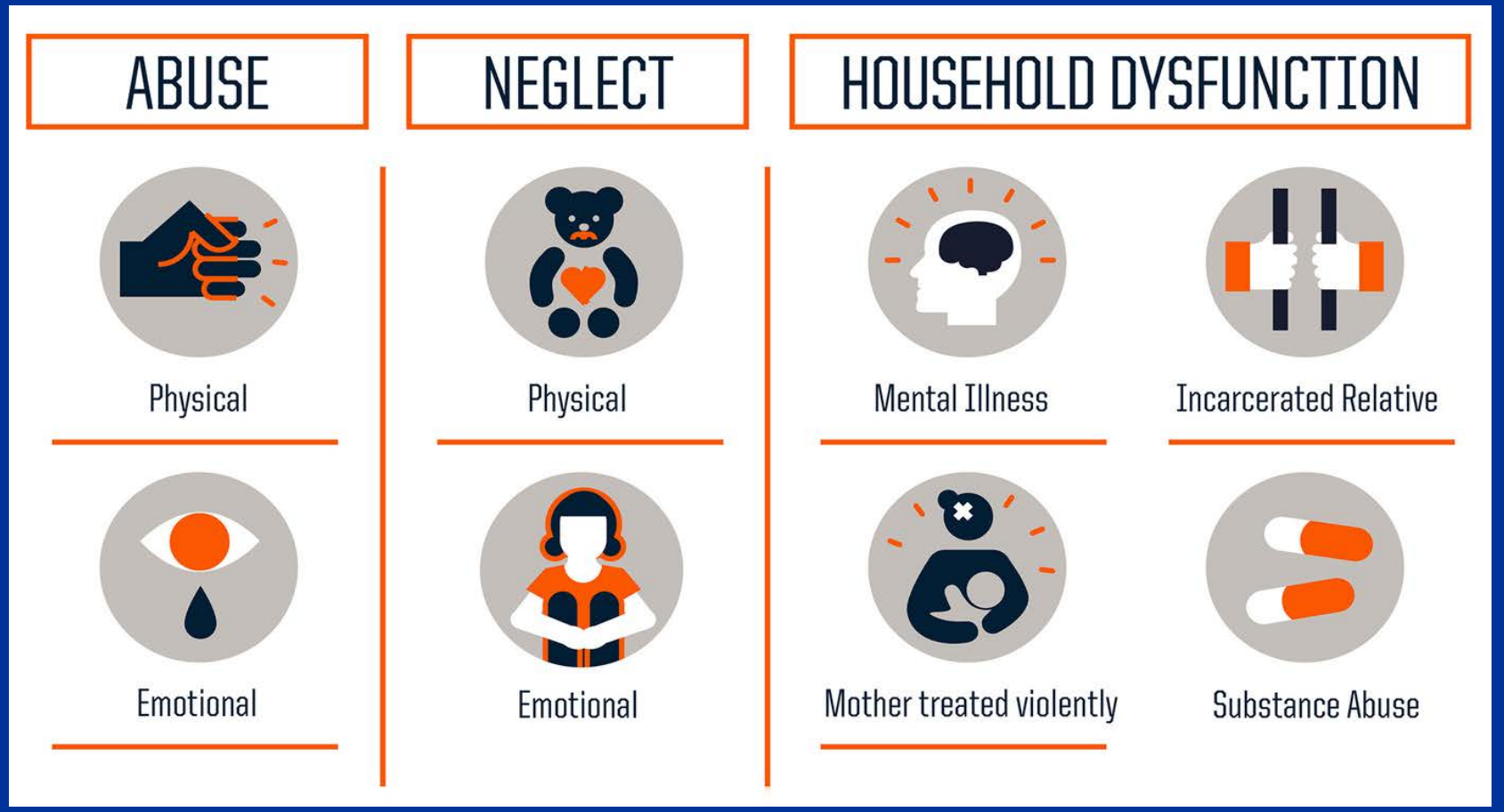
Coronary Artery Disease



Substance Use Disorders



Adverse Childhood Experiences



- 1 ACE: 2x odds being ever addicted to drugs
- 5+ ACE: 10x odds ever injecting drugs

Screening for Substance Use

- NIDA Quick Screen – www.drugabuse.gov/nmassist/

Quick Screen **Question:** **In the past year, how often have you used the following?**	**Never**	**Once or Twice**	**Monthly**	**Weekly**	**Daily or Almost Daily**
Alcohol • **For men, 5 or more drinks a day** • **For women, 4 or more drinks a day**					
Tobacco Products					
Prescription Drugs for Non-Medical Reasons					
Illegal Drugs					

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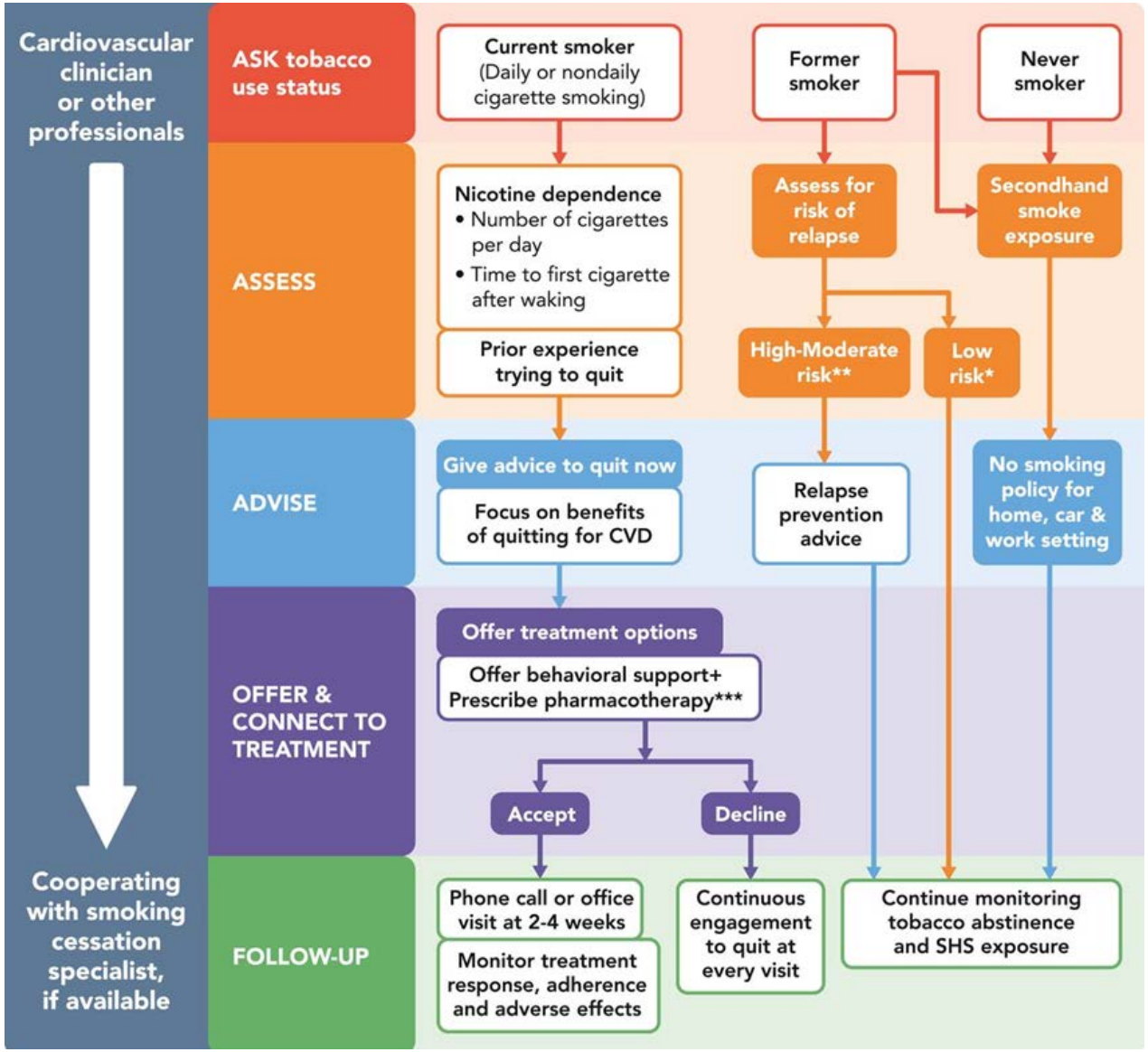
2018 ACC Tobacco Cessation Treatment



- CDC: 50% of people who smoke receive advice to quit from a health professional

J Am Coll Cardiol. Dec 2018; in press.

Substance Use Disorder (DSM-5)

Physiologic sequelae

- Tolerance
- Withdrawal
- Craving

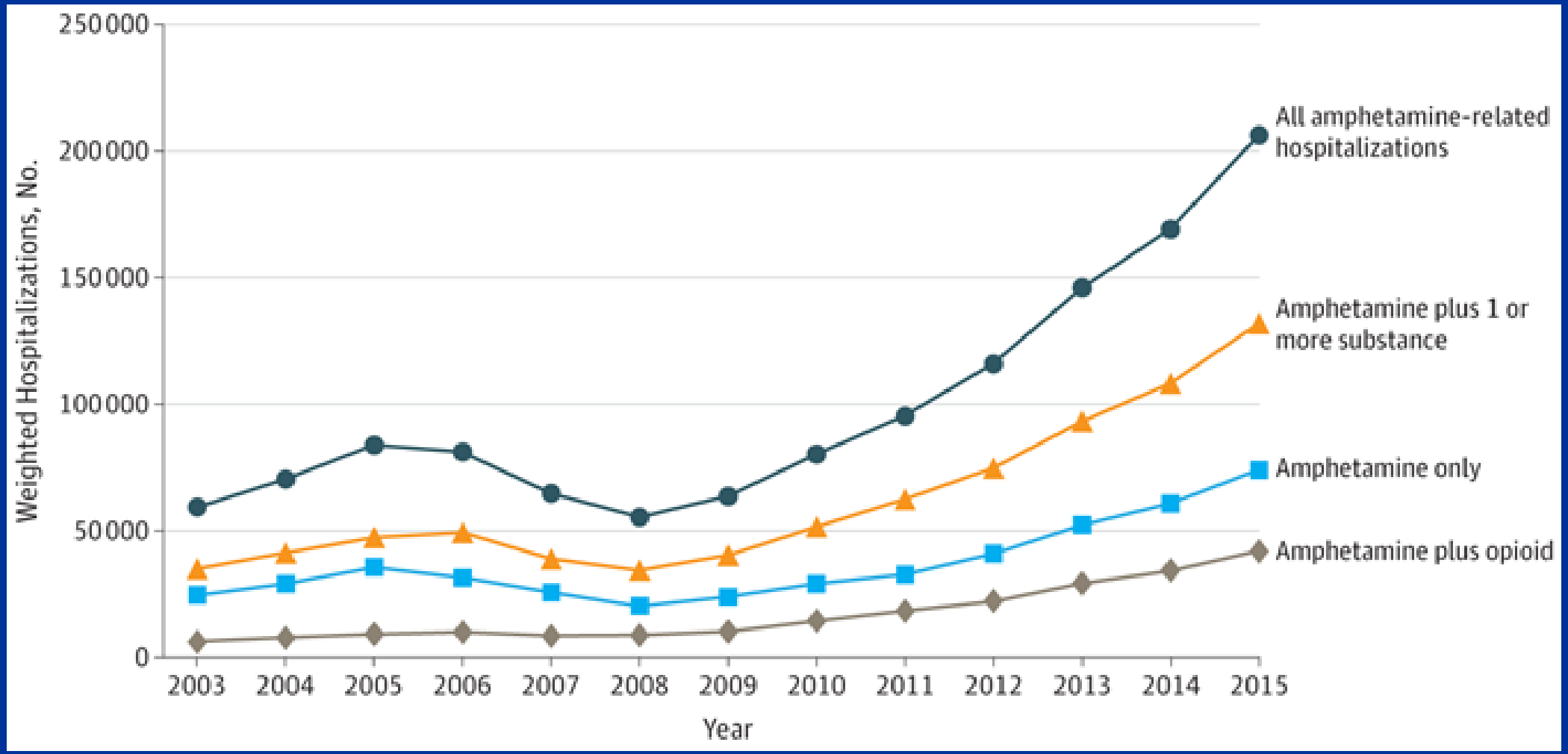
Loss of control

- Greater amount / time than intended
- Persistent desire to but unable to cut down
- Excessive time getting, using, recovering

Adverse consequences

- Failure to fulfill responsibilities
- Use in physically hazardous situations
- Social/interpersonal problems
- Give up or ↓ other important parts of life
- Ongoing use despite these problems

Methamphetamine-Involved Hospitalizations



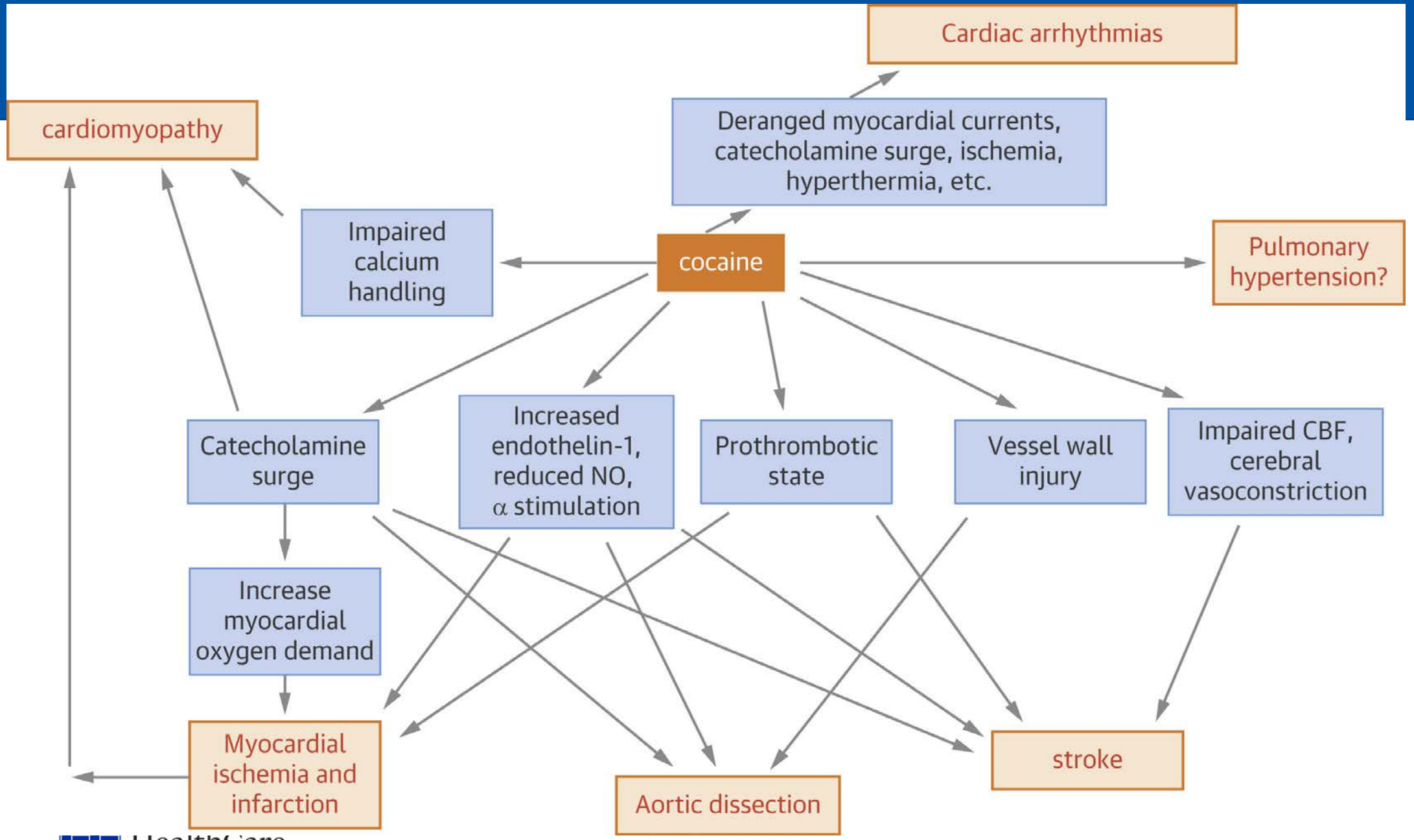
JAMA Netw Open. 2018;1(6):e183758.

Cardiovascular Complications of Methamphetamines

- Methamphetamine involved in 29% KY overdose deaths in 2017 (57% increase from 2016)
- Alpha- and beta-adrenergic stimulation → hypertension, tachycardia, vasoconstriction
- Early atherosclerotic disease
  - 25% incidence of ACS in persons with methamphetamine use and chest pain
- Cardiomyopathy – particularly dilated
- Aortic dissection
- Pulmonary hypertension

Cardiovascular Effects of Cocaine

- Hypertension, tachycardia, endothelial dysfunction, platelet aggregation → can precipitate ACS
- Vasoconstriction can cause coronary vasospasm
- Long-term use → accelerated atherosclerosis
- Cardiomyopathy
- Stimulates alpha- and beta-adrenergic receptors → concern about unopposed alpha stimulation with beta-blockers
  - Likely safe in chest pain and recent cocaine ingestion
  - Lack of data during cocaine intoxication



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J Am Coll Cardiol. 2017;70(1):101-13.

2014 AHA/ACC NSTE-ACS Guideline

- NSTE-ACS and recent cocaine or methamphetamine should be treated in the same manner as those without (Class I, C)
  - Except acute intoxication (euphoria, tachycardia, hypertension) – avoid beta-blocker
- Benzodiazepines with or without nitroglycerin for hypertension and tachycardia in NSTE-ACS with intoxication (Class IIa, C)
- Avoid beta-blockers in patients with ACS and recent cocaine or methamphetamine use with acute intoxication – risk of coronary spasm (Class III, C)

Treatment of Stimulant Use Disorders

- No FDA-approved pharmacologic treatments for methamphetamine or cocaine use disorders
- Limited data for topiramate in cocaine use disorder
- Limited data for mirtazapine in methamphetamine use disorder

- Contingency management
  - Vouchers
  - Fishbowl method

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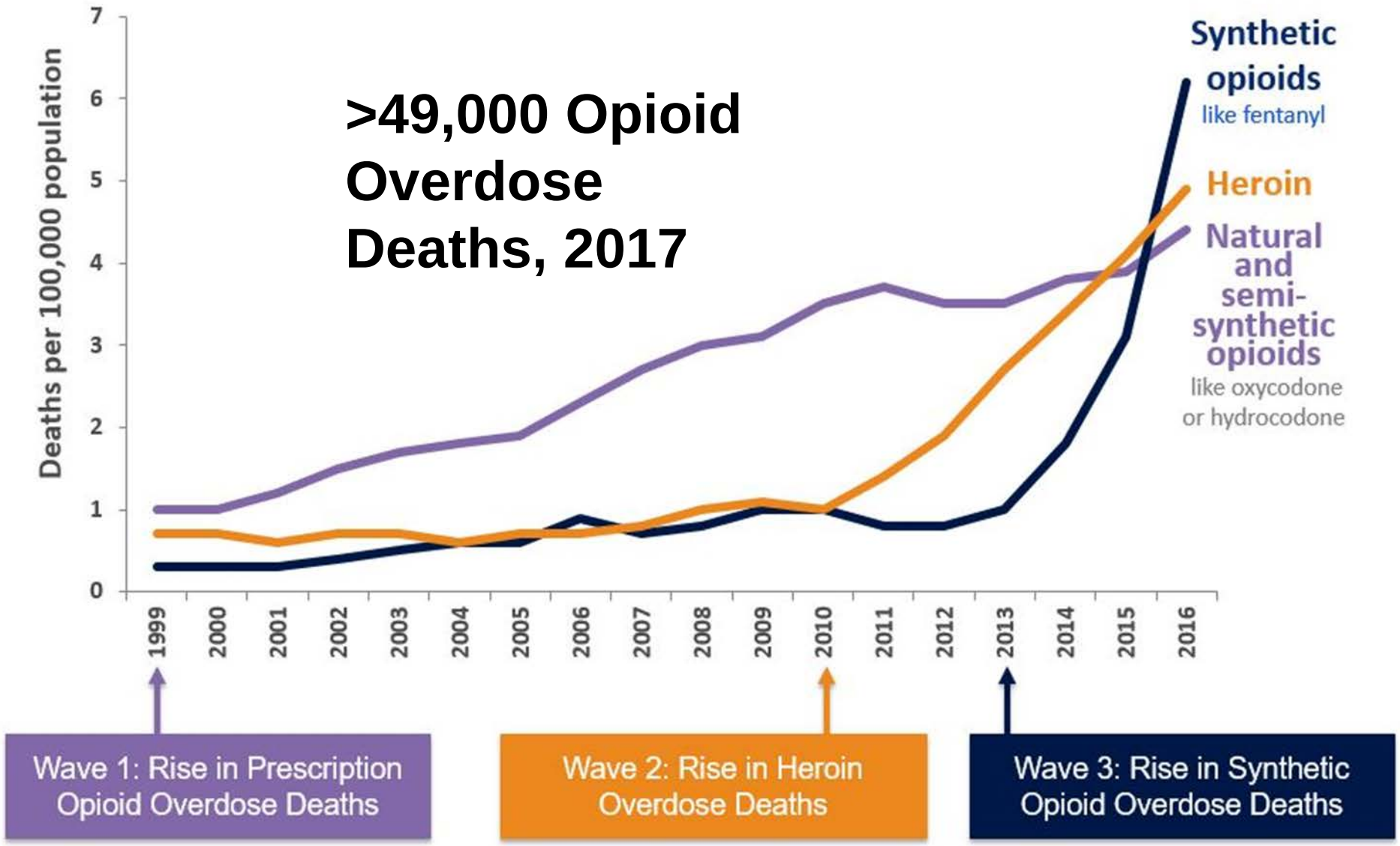
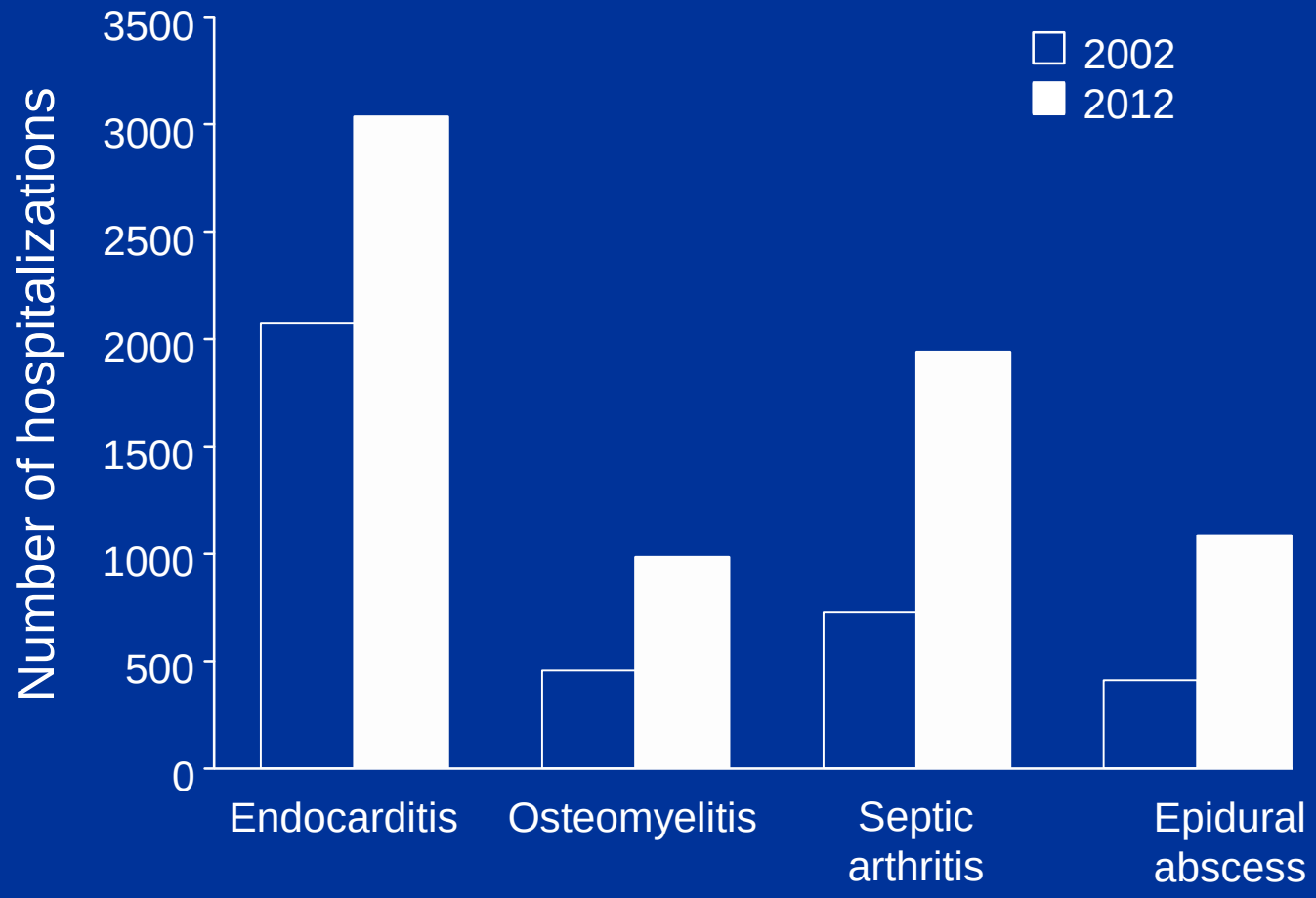
3 Waves of the Rise in Opioid Overdose Deaths



SOURCE: National Vital Statistics System Mortality File.

Hospitalizations for Opioid Use Disorder and Associated Infections



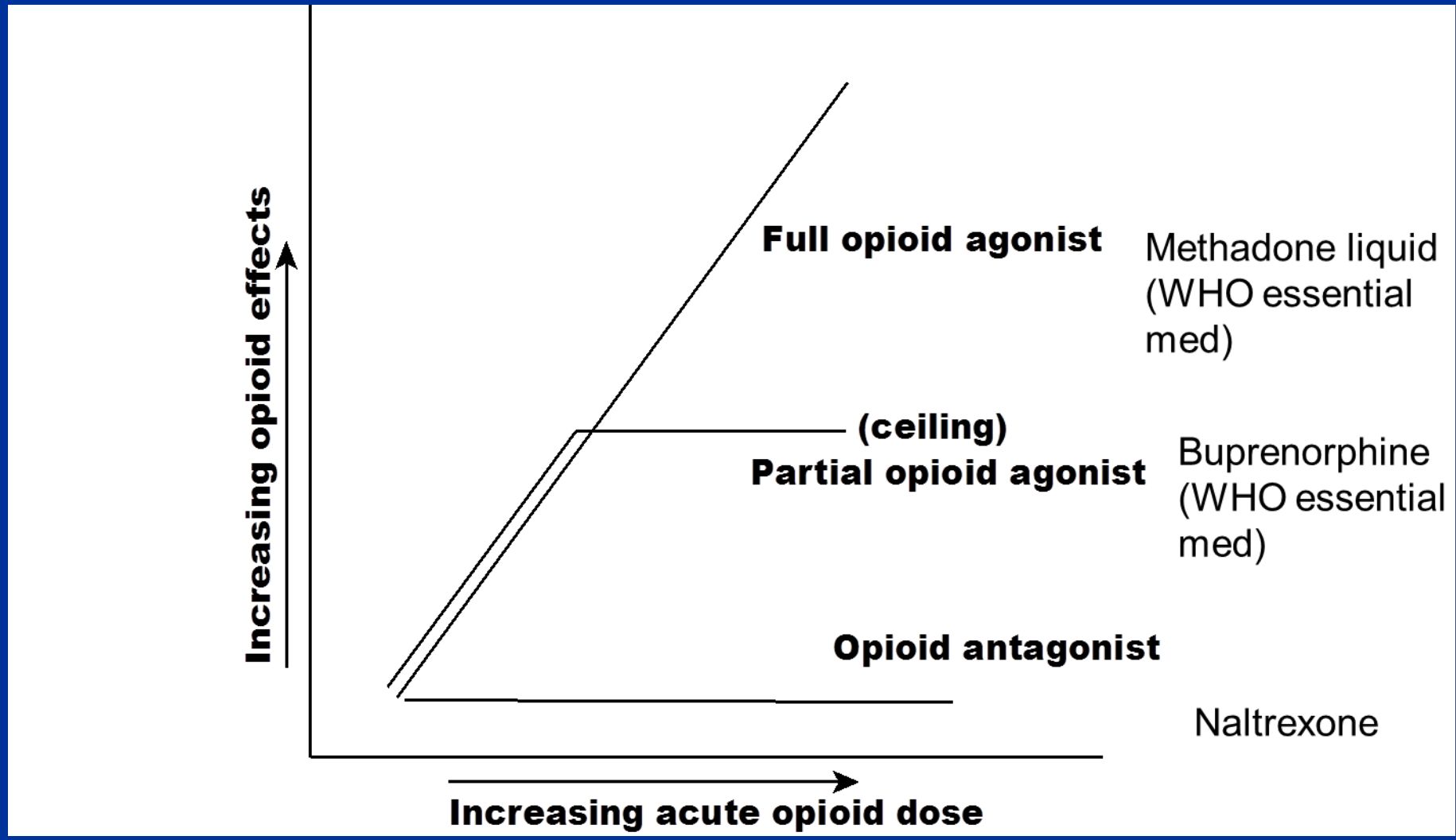
Health Affairs 2016; 35(5):832-837

Endocarditis in Persons who Inject Drugs

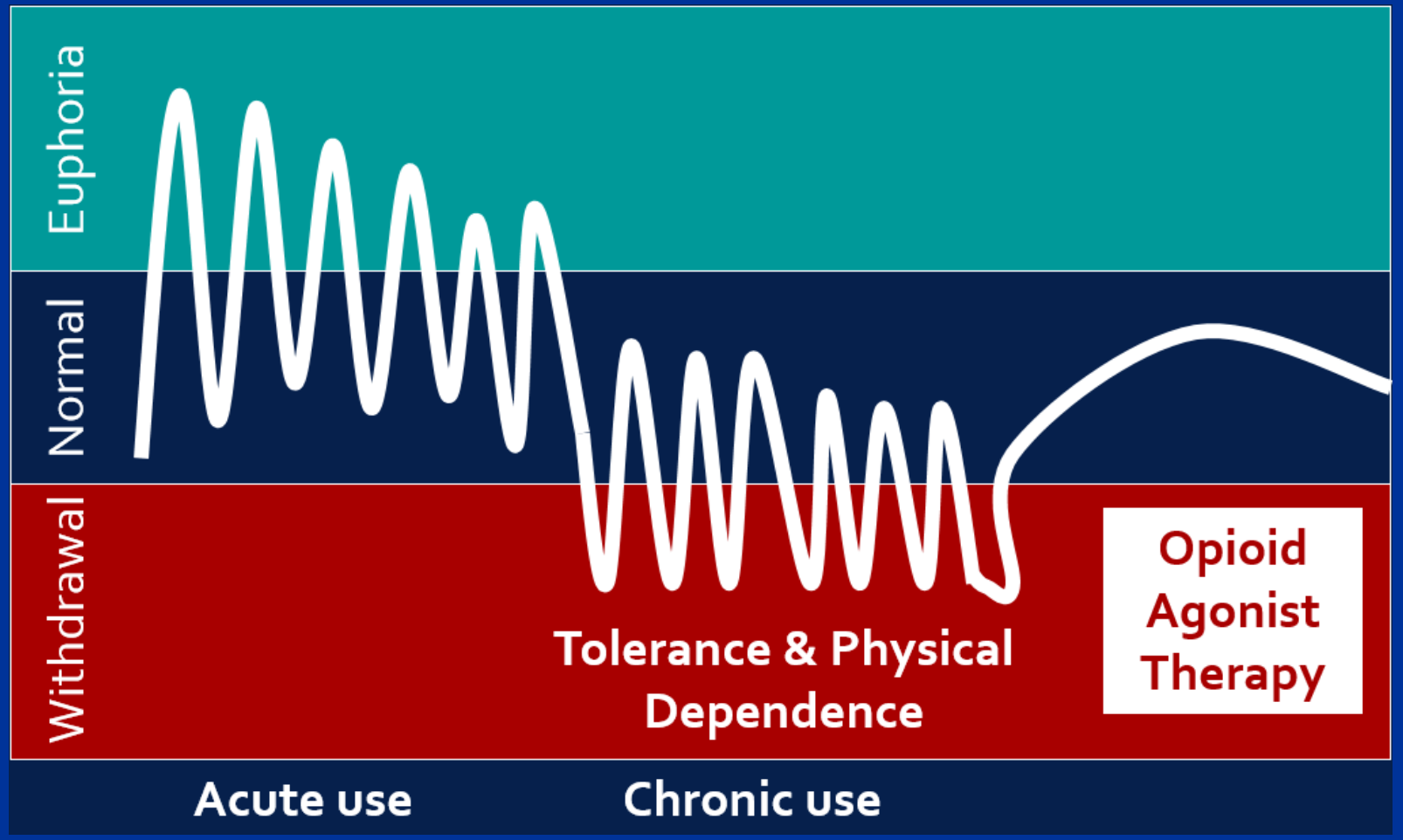
- Overall IE mortality ~30% at 1 year
- Isolated TV endocarditis lower mortality ~5%, but higher if surgery needed (~50% at 5 years) (Cahill 2016)
- Proportion of IE hospitalizations associated with IDU increased from 7% to 12.1% from 2000 to 2013 (Wurcel 2016)
- Persons with opioid use disorder (OUD) and IE frequently do not receive treatment for OUD (Fanucchi 2018)
- Referral to addiction treatment associated with lower mortality in IE in PWID (Rodger et al. JAMA Network Open 2018)

Cahill and Prederast, Lancet 2016; Wurcel, et al. OFID 2016; Fanucchi et al. JSAT 2018.

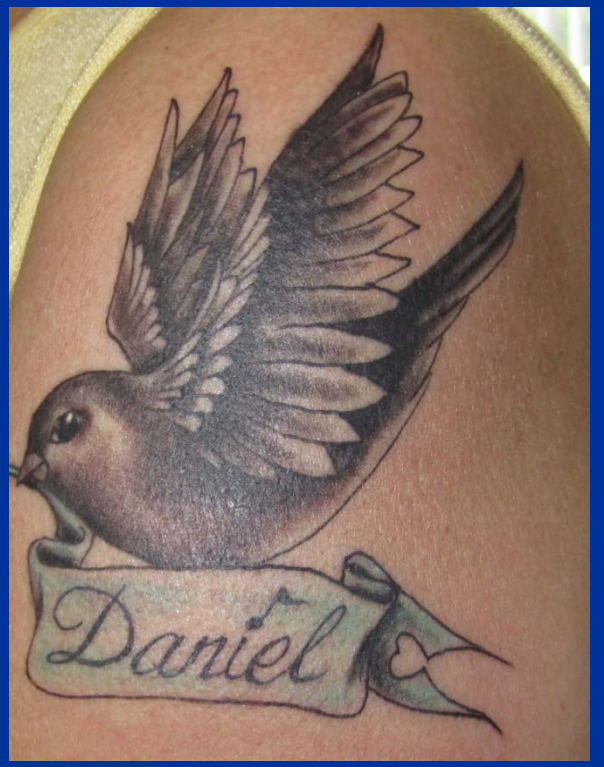
Medications



Medications for Opioid Use Disorder



Treatment



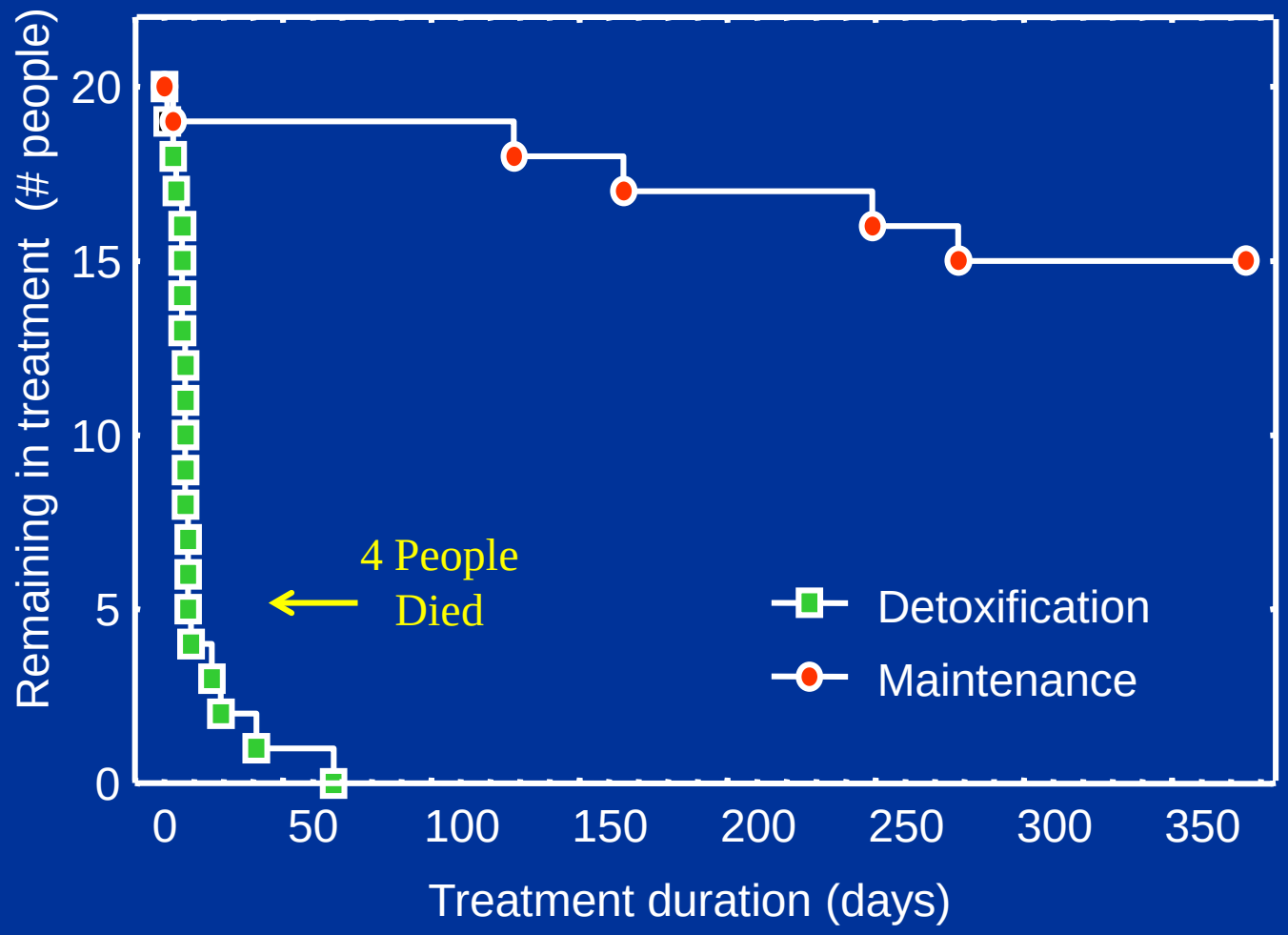
- Chronic Disease Model
  - Screen, assess, diagnose
  - Medications
  - Behavioral interventions
  - Stepped care approach

- Treatment goals: *remission* and return to function in life
- Relapse rates >80% with abstinence / detox

Buprenorphine/naloxone

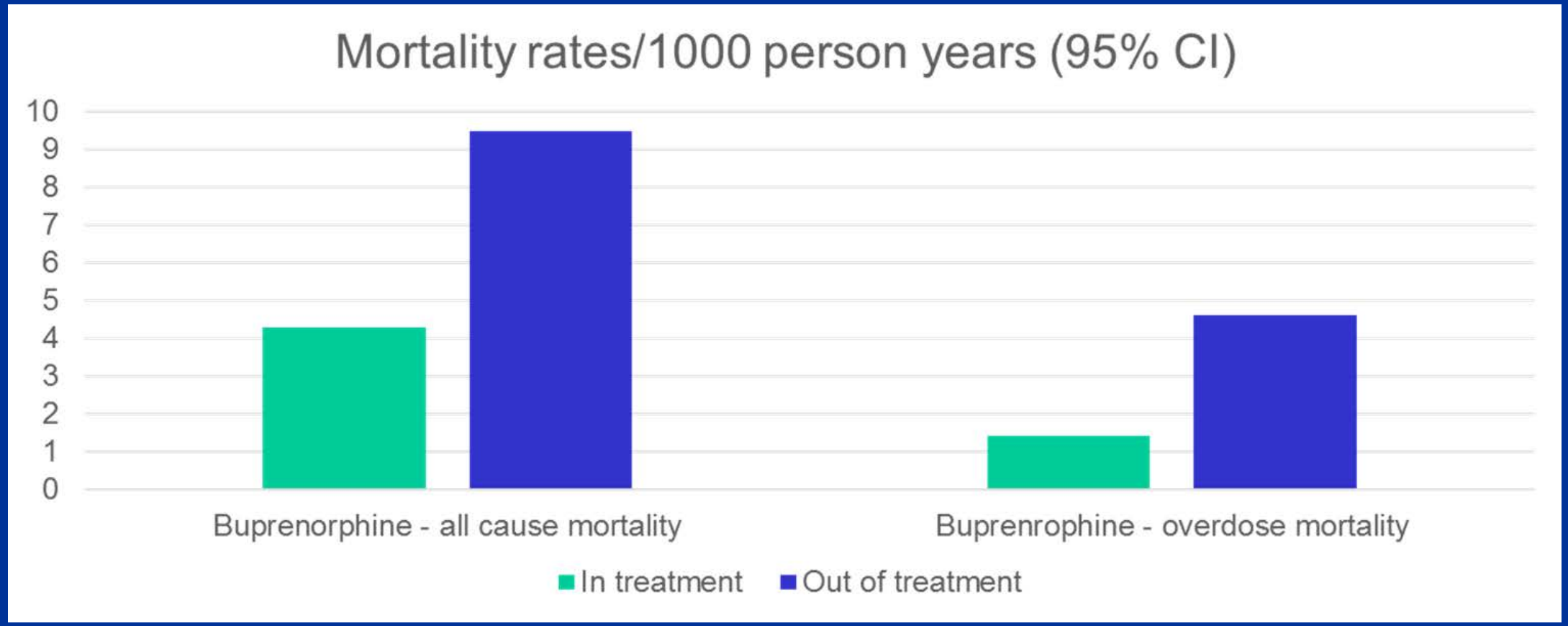
- Drug Abuse Treatment Act 2000
- Partial opioid agonist
  - Decreased overdose risk
- Naloxone not active unless injected
  - Decreased abuse risk
- Sublingual, once daily
- Bup/nx 4:1 ratio
- New depot / implants

Buprenorphine vs. Detoxification for Heroin Dependence with Enriched Psychosocial Services



Kakko, Svanborg, Kreek & Heilig (2003) Lancet 361: 662-668.

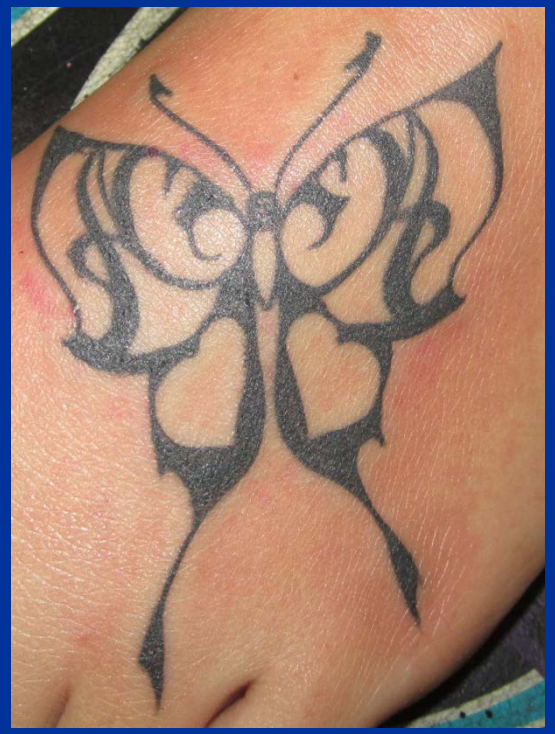
Mortality Risk In and Out of Buprenorphine Treatment



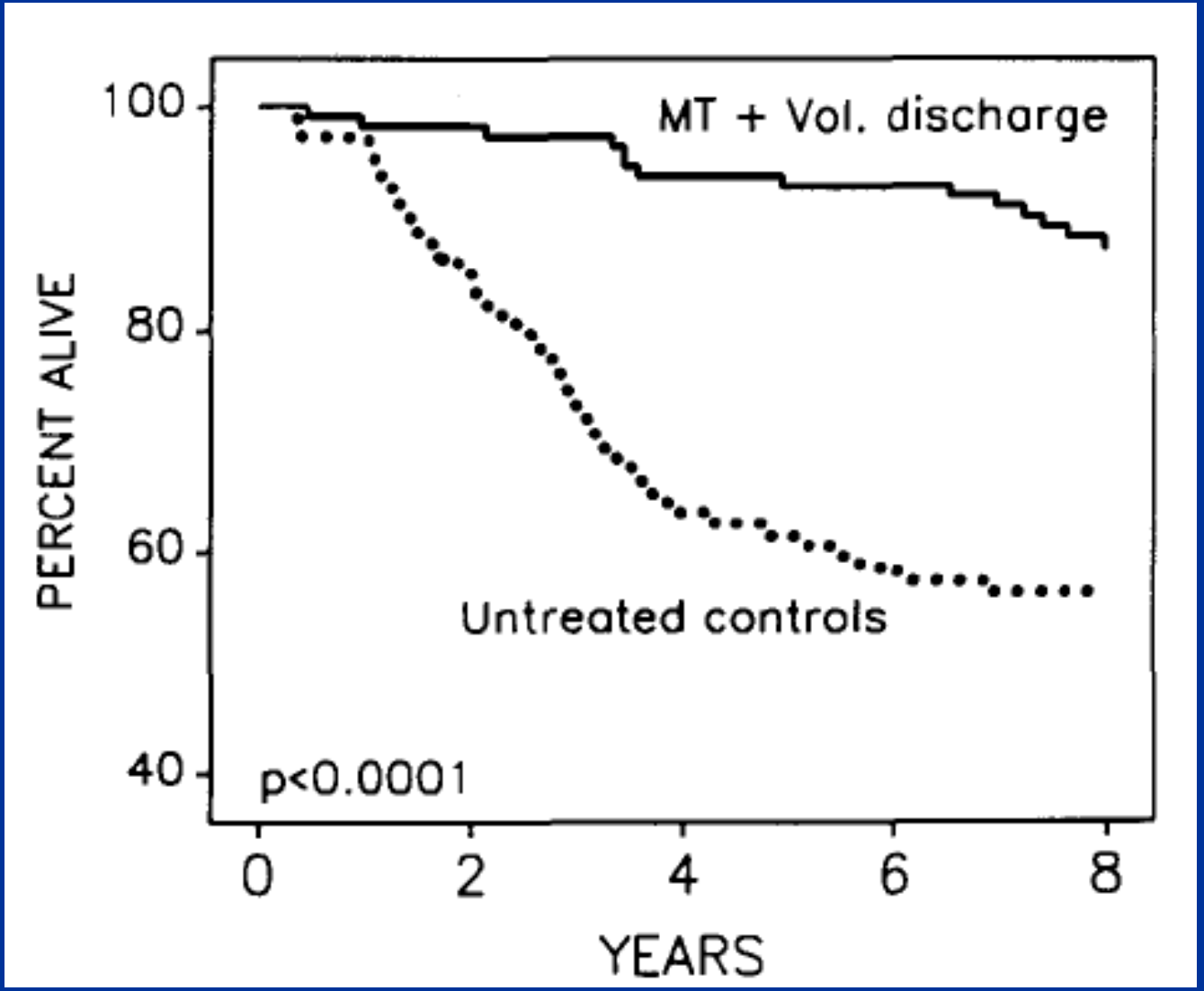
Sordo, et al. BMJ 2017

Methadone - Opioid Treatment Program

- Only legal setting for methadone for addiction treatment in US.
- Federal and state regulations
- Federal: daily dosing first 90 days
- 5 days to steady state
- Drug interactions; QTc prolongation
- Challenges: stigma, access

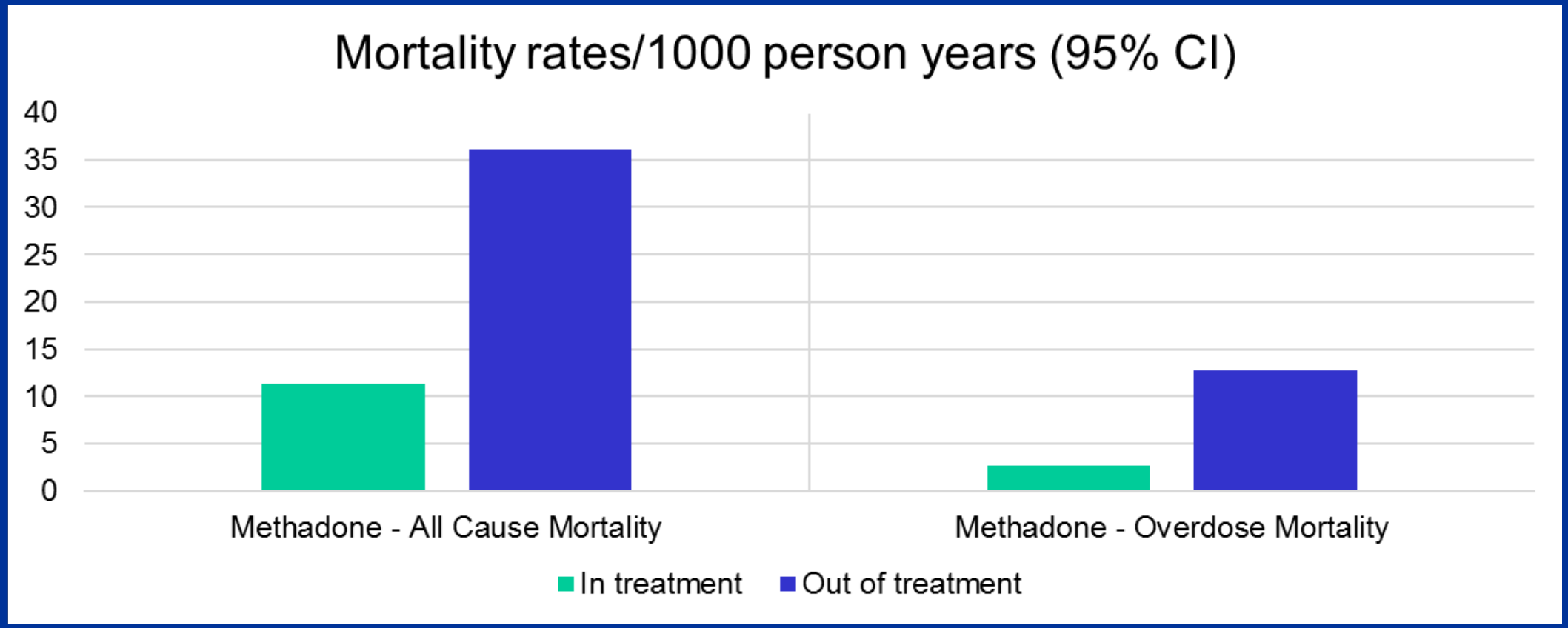


Mortality in Methadone Treatment



Acta Psych Scand 1990; 82:223-227.

Mortality Risk In and Out of Methadone Treatment



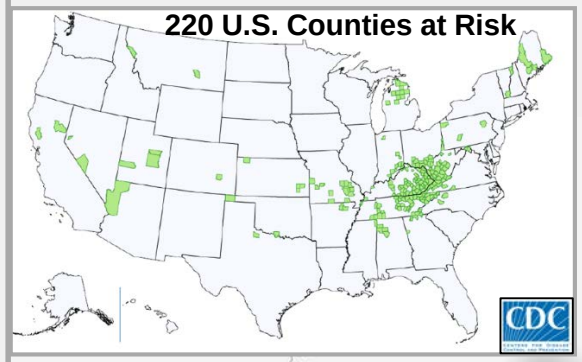
Sordo, et al. BMJ 2017

Prescribe Naloxone

prescribetoprevent.org

Kentucky Public Health
Prevent. Promote. Protect.

54 Kentucky Counties with Increased Vulnerability to Rapid Dissemination of HIV/HCV Infections Among People who Inject Drugs and Preventive Syringe Exchange Programs (SEPs)



National Ranking by County*

1	**Wolfe**	34	Martin	108	Gallatin
3	**Breathitt**	**35**	**Boyle**	125	Bath
4	**Perry**	39	Lawrence	126	Grayson
5	**Clay**	40	Rockcastle	**129**	**Greenup**
6	Bell	45	Harlan	132	Green
8	Leslie	**48**	**McCreary**	153	Casey
9	**Knox**	**50**	**Letcher**	**154**	**Carter**
10	**Floyd**	53	Johnson	163	Monroe
11	Clinton	**54**	**Russell**	**167**	**Garrard**
12	**Owsley**	**56**	**Elliott**	**175**	**Robertson**
14	**Whitley**	**65**	**Laurel**	178	Lewis
15	**Powell**	67	Carroll	179	Edmonson
17	Knott	75	Taylor	180	Allen
21	**Pike**	**77**	**Grant**	**187**	**Boyd**
23	**Magoffin**	**93**	**Adair**	191	Hickman
25	Estill	**97**	**Lincoln**	202	Breckinridge
30	**Lee**	99	Wayne	**212**	**Campbell**
31	Menifee	101	Cumberland	**214**	**Mercer**

** Vulnerable Counties in **RED** have Operating SEPs*

Specific concerns regarding Kentucky Counties:

1. Dense drug user networks similar to Scott County Indiana
2. Lack of syringe exchange programs

54 Vulnerable Counties

56 Operating Syringe Exchanges (48 Counties) as of 04/15/2019

4 Counties are Approved but Not Yet Operational

NOTE: CDC stresses that this is a REGION-WIDE problem, not just a county-specific problem.

Questions?

- Thank you

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Illicit Fentanyl

- Synthetic opioid 50-100x more potent than heroin

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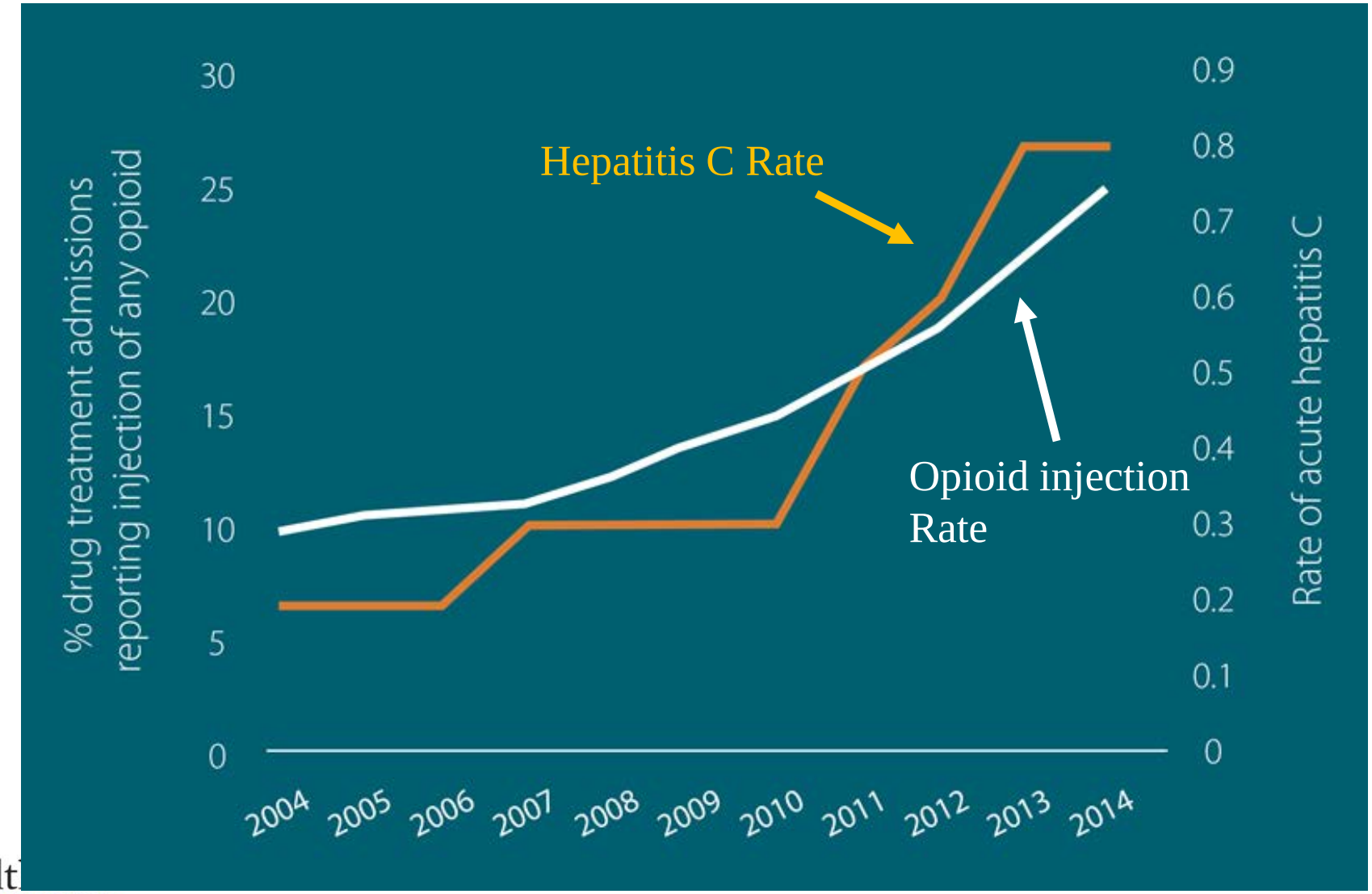
MMWR 2008; images: www.dea.gov

Hepatitis C & Opioid Injection - US Non-Hispanic, White Population (2004-2014)



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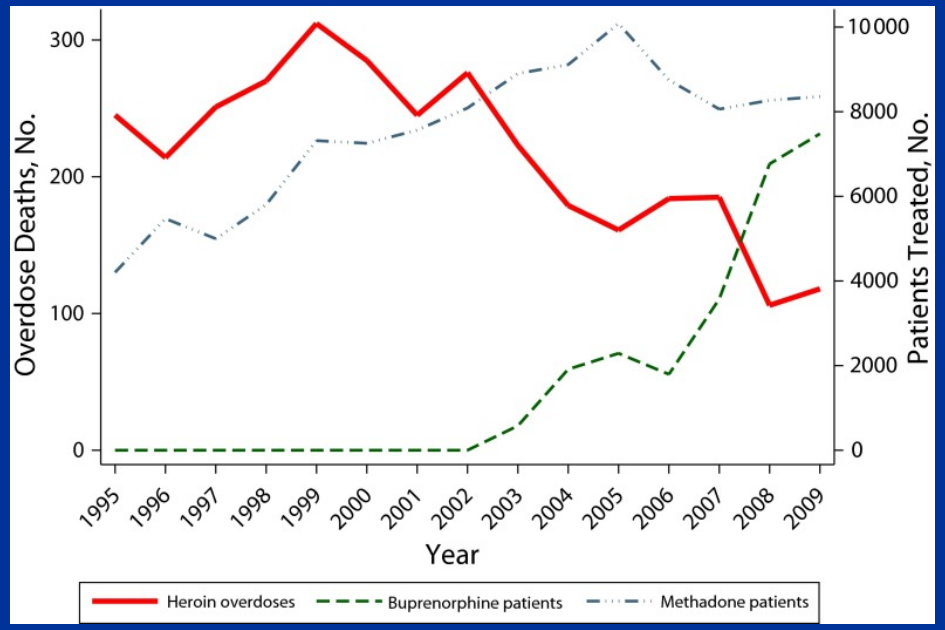
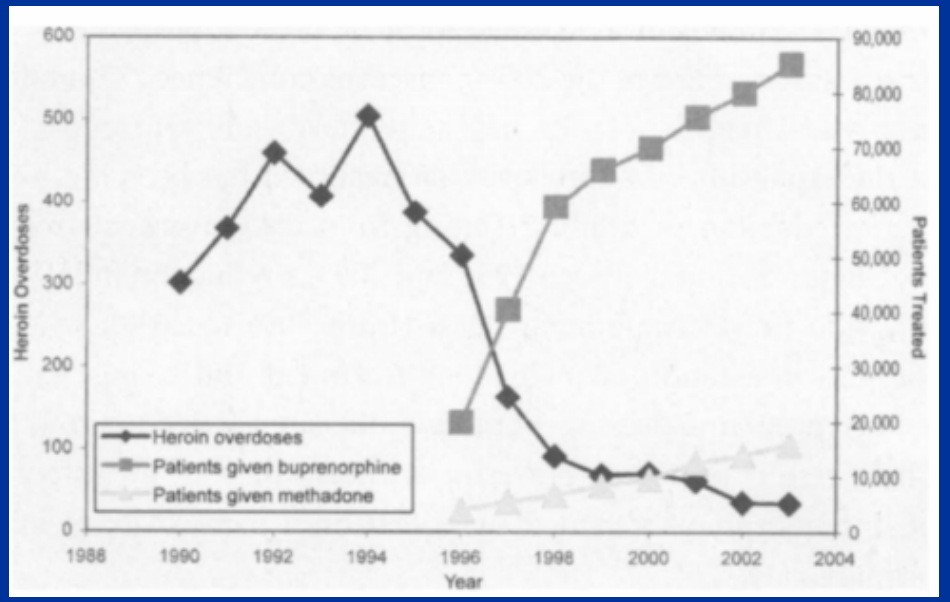
Source: CDC, SAMHSA

Access to Medication Decreases Overdose Deaths



Maryland: 50% reduction in overdose deaths



France: 79% reduction in overdose deaths

AJPH 103(5):917-922; Clin Inf Dis 2006: S197-S215