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Youth and the Opioid-Related Overdose Crisis in the United States

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- **Conflict of interest statement:**

- I have no commercial relationships to disclose
- I will not be discussing any unapproved uses of pharmaceuticals or devices

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- National Institute on Drug Abuse K23 DA045085
- Thrasher Research Fund Early Career Award
- Academic Pediatric Association Young Investigator Award



A Public Health Crisis...

Children and adolescents have not been spared from the rise in morbidity and mortality attributable to opioids in the United States.

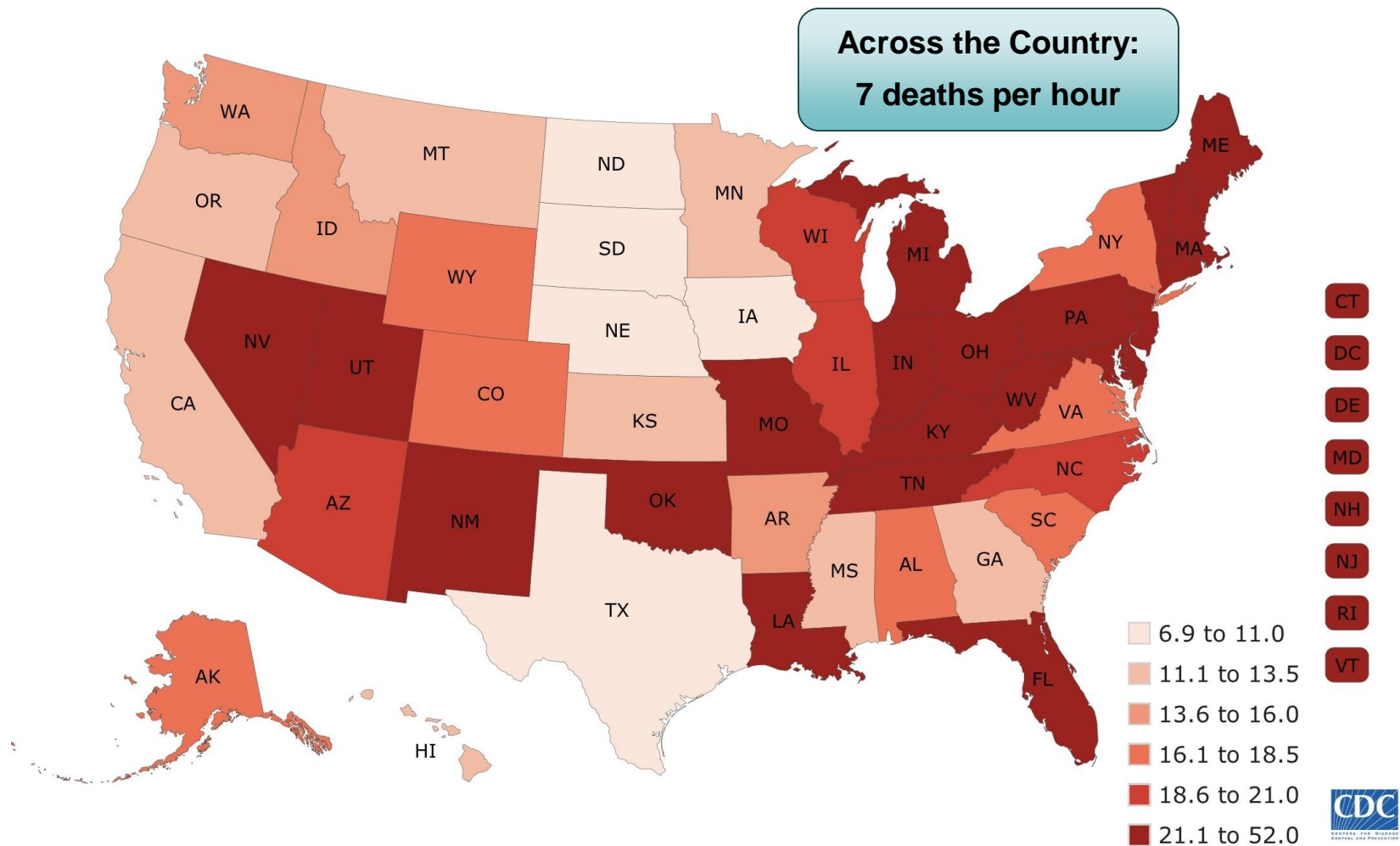
By the end of 60 minutes, learners will:

1. Review the epidemiology of opioid-related harm in the US, with a focus on adolescents and young adults (“youth”);
2. Ensure evidence-based screening and treatment for youth with opioid use disorder; and
3. Appreciate key differences in providing treatment for opioid use disorder to young people in comparison to adults



Part 1: Epidemiology

Drug Overdose Deaths, US 2016



2016 Data, Centers for Disease Control and Prevention (Published December 2017)

Overdose Mortality Worldwide

Not only a problem in the US...

- **Canada:** 40% increase from 2016 to 2017
- **Australia:** 65% increase since 2001
- **United Kingdom:** Highest rate since 1993
- **Other European countries:** Estonia, Norway, Ireland, Sweden, Finland, Denmark experiencing elevated mortality



Public Health Agency of Canada, 2017

A Roxburgh et al. *Drug Alcohol Depend.* 2017;179:291-298

Office of National Statistics, United Kingdom, 2017

European Monitoring Centre for Drugs and Drug Addiction, 2017

Image from PBS, 2018

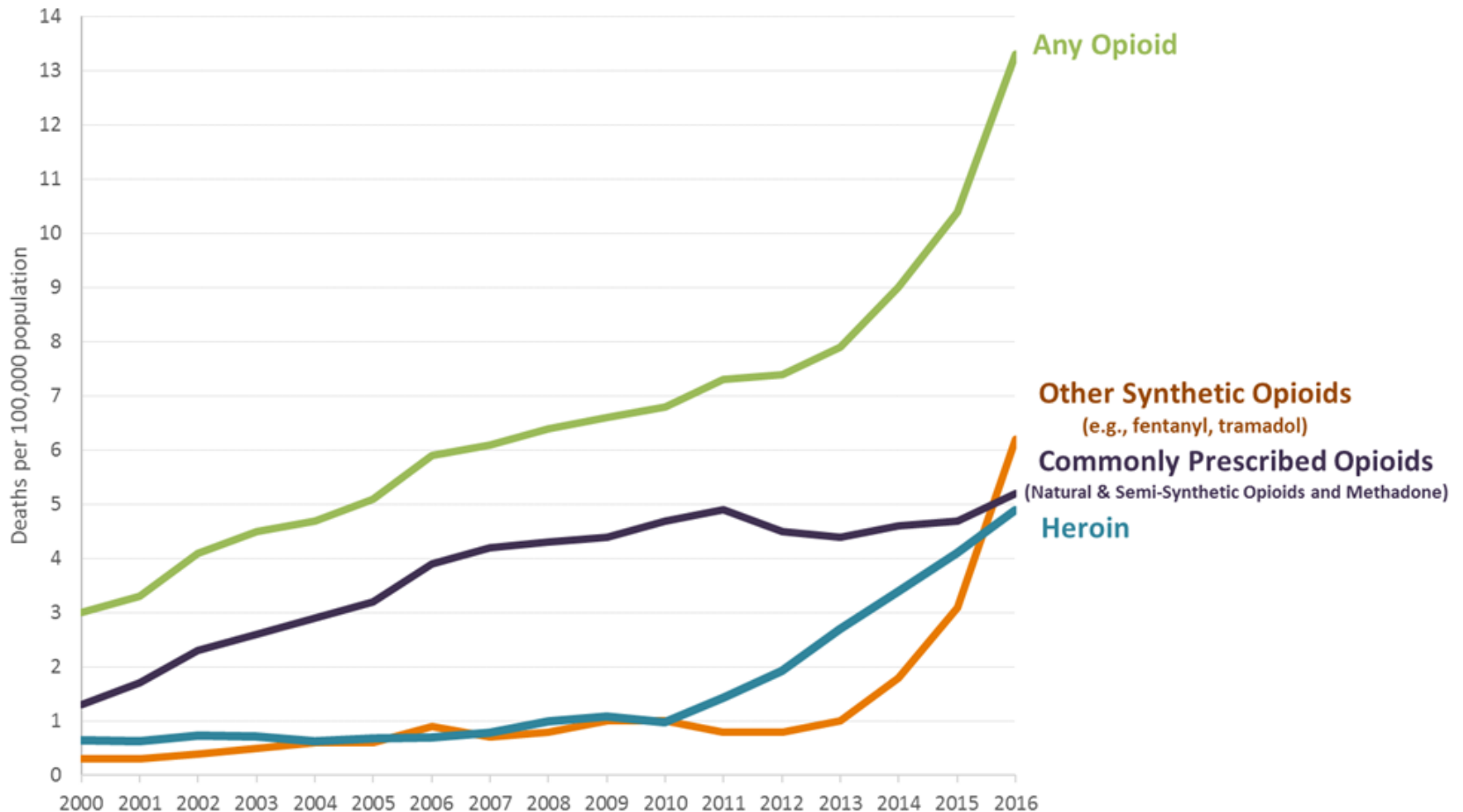
The Basics: Opioids & Fentanyl

- Most commonly misused opioids: heroin, pills (oxycodone, hydrocodone, methadone, morphine, hydromorphone)
- Can be ingested, inhaled (snorted), or injected
- **Fentanyl:** Now implicated in 3 of 4 deaths in many North American settings
 - Highly potent (≥ 10 times more than heroin)
 - Not prescribed – typically manufactured overseas
 - Used to make counterfeit prescription pills sold on the street, contaminates the heroin supply, cocaine supply



Centers for Disease Control and Prevention, 2017; Public Health Agency of Canada, 2017
Images from PBS, 2018, and Tennessee Bureau of Investigation, 2017

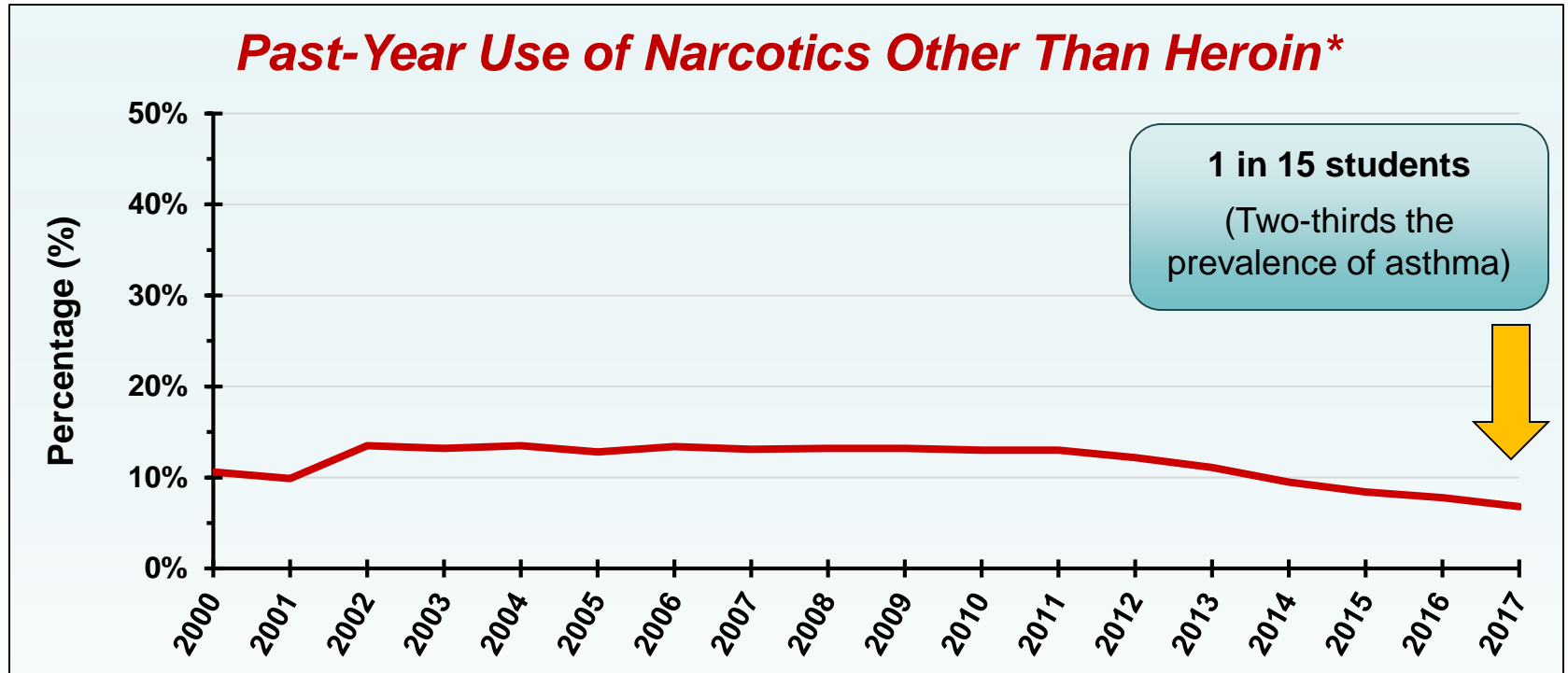
The 3 Waves of the US Crisis



National Vital Statistics System, CDC WONDER, 2017

Why Youth Matter

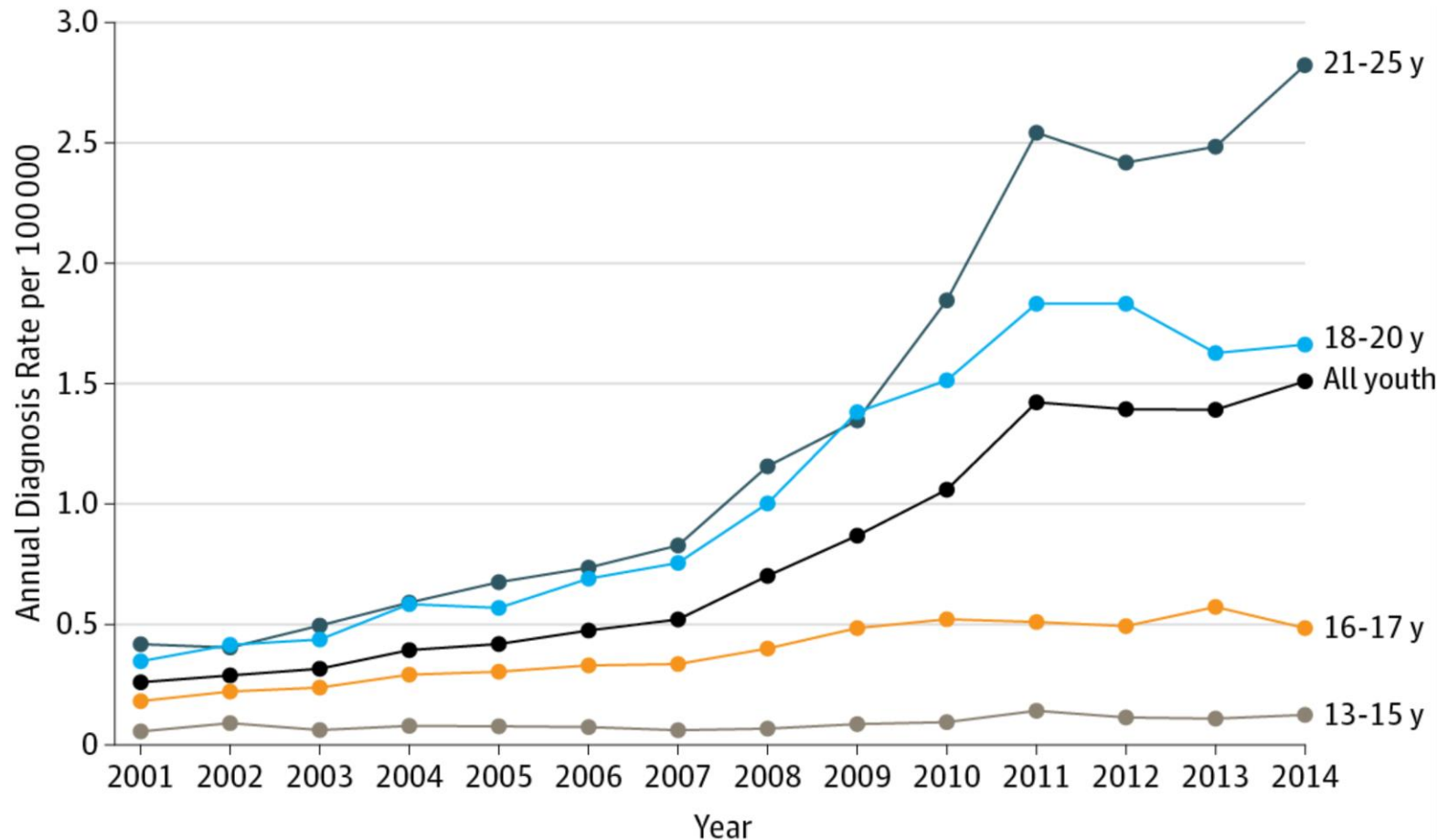
2 in 3 individuals in opioid treatment report first use before **age 25**,
and **1 in 3** report first use before **age 18**...



**Note: Only 0.7% of all 12th grade students reported past-year heroin use in 2017*

Monitoring the Future, University of Michigan, 2017

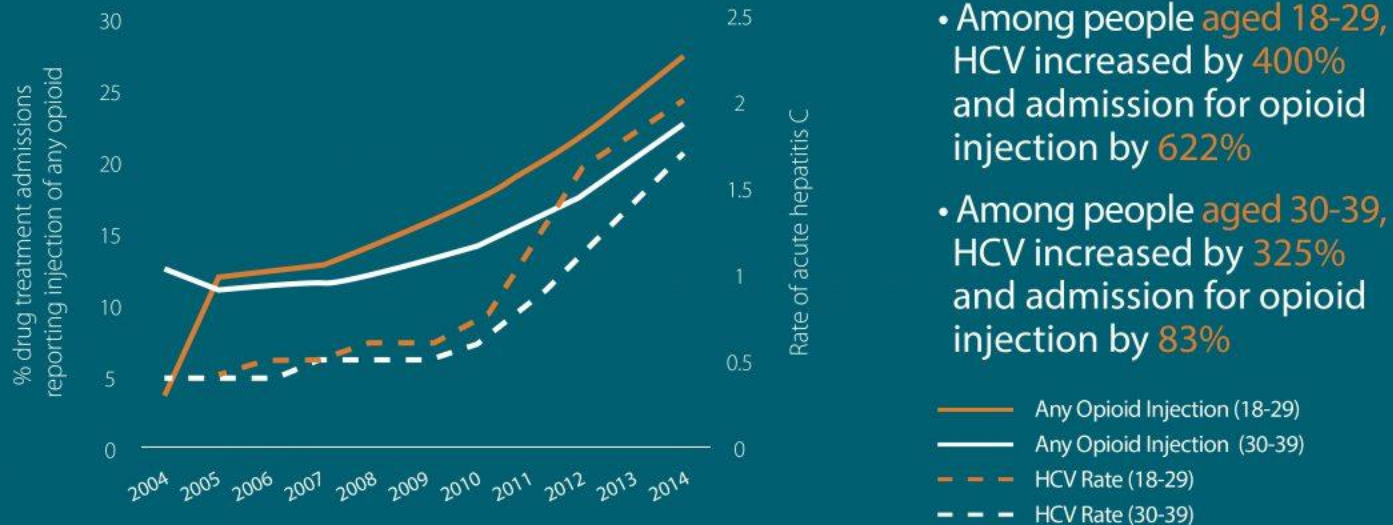
New Diagnoses of OUD



Hadland SE, et al. *JAMA Pediatr*, 2017;171(8):747-755.

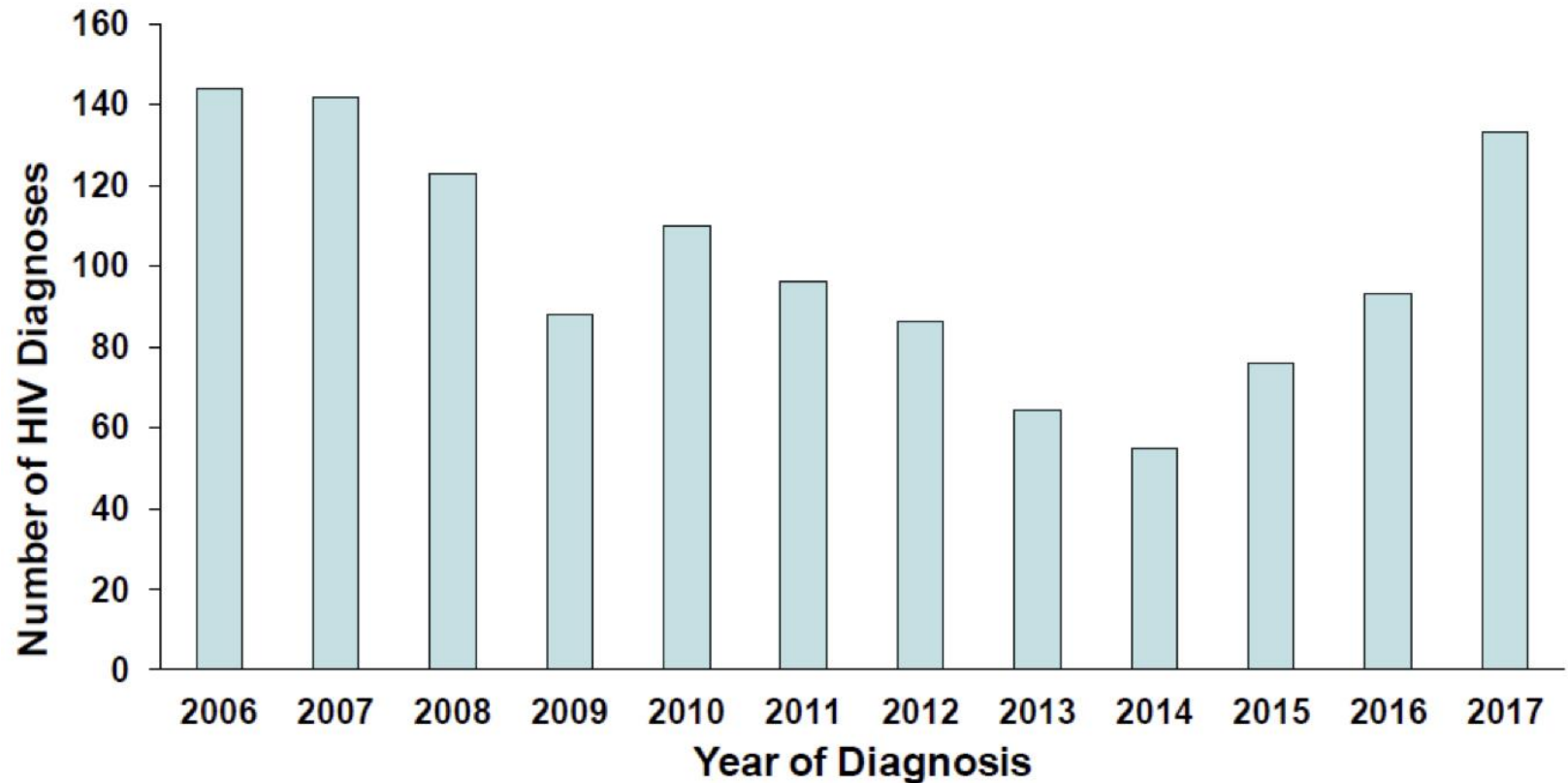
Hepatitis C

HEPATITIS C AND OPIOID INJECTION ROSE DRAMATICALLY IN YOUNGER AMERICANS FROM 2004-2014



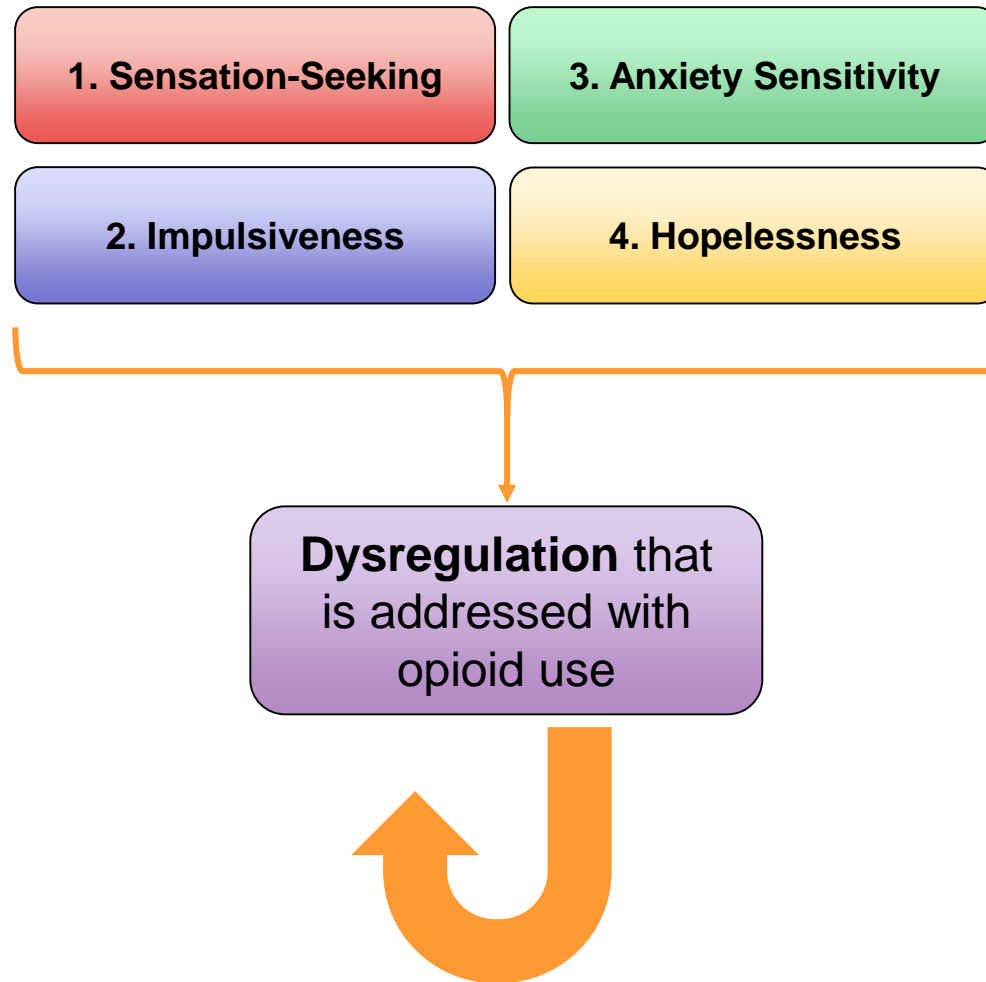
CDC & SAMHSA, 2017

HIV in Massachusetts



Massachusetts Department of Public Health, 2018

Why Do Youth Use Opioids?



Conrod PJ, et al. *JAMA Psychiatry*, 2013;70(3):334-42

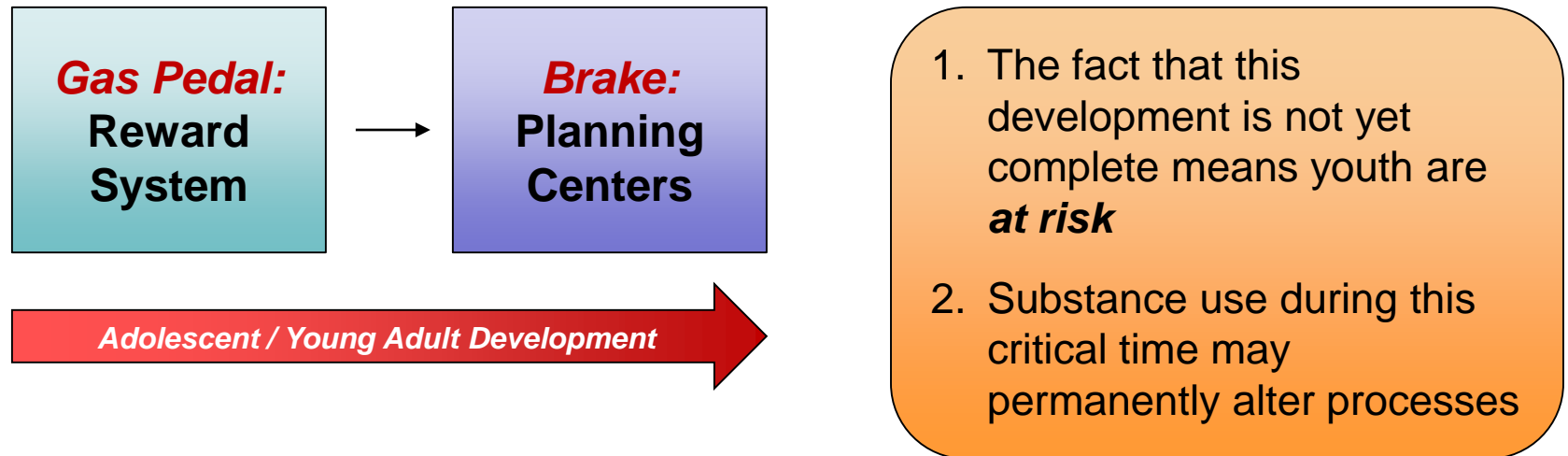
A Developmental Condition

- **Brain development:**

- Reward system *developed* (e.g., nucleus accumbens), and planning centers *developing* (e.g., prefrontal cortex)

- **Social development**

- Coping skills, interpersonal relationships



Part 2:

Screening and Treatment

“Addiction”: Opioid Use Disorder

Opioid use occurring over 12 months with ≥ 2 of:

1. Taken in larger amounts / over a longer period than intended
2. Persistent desire / unsuccessful efforts to cut down
3. Excess time spent in activities to obtain, use or recover from substance
4. Craving
5. Failure to fulfill major role obligations at work, school, or home
6. Continued use despite having persistent / recurrent social or interpersonal problems
7. Social, occupational, or recreational activities given up
8. Recurrent use in situations in which it is physically hazardous
9. Continued use despite knowledge of having a persistent or recurrent physical or psychological problem
10. Tolerance
11. Withdrawal

Mild:

2-3 criteria

Moderate:

4-5 symptoms

Severe:

≥ 6 symptoms

Diagnostic and Statistical Manual of Mental Disorders 5, APA, 2013.

Screening: CRAFFT 2.1

Part A. During the past 12 months, on how many days did you:

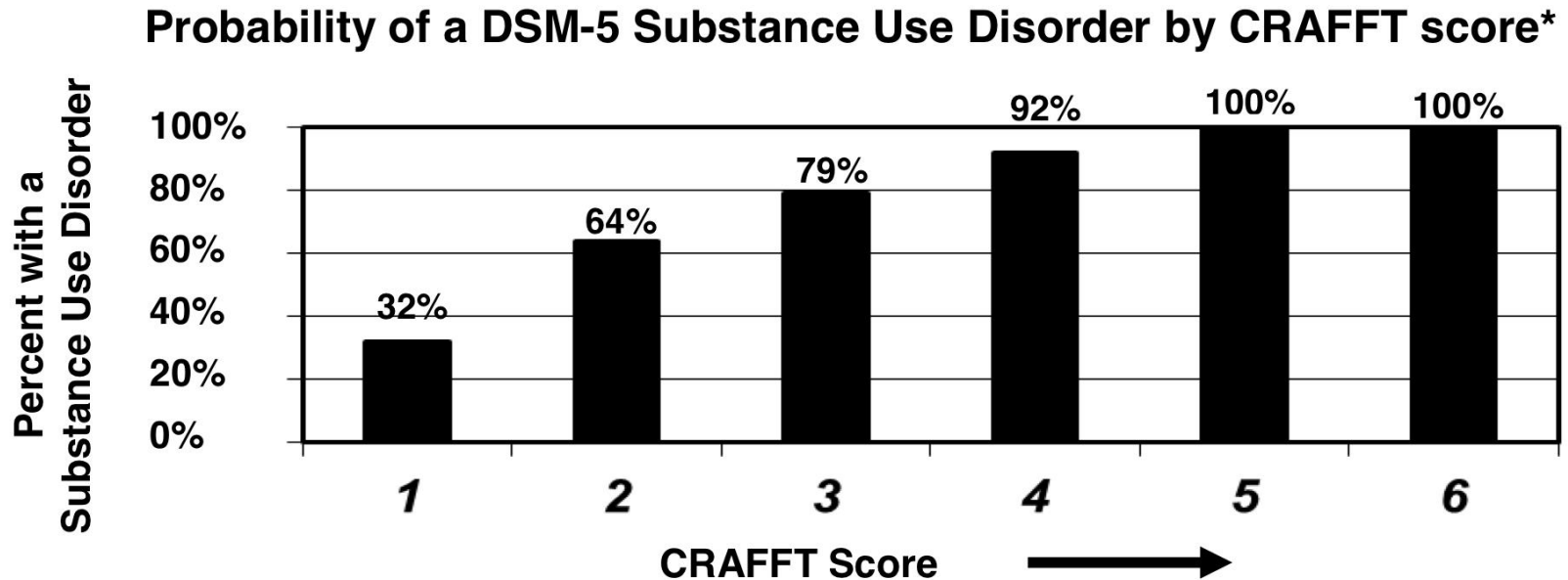
1. Drink more than a few sips of beer, wine, or any drink containing **alcohol**?
2. Use any **marijuana** (weed, oil, or hash by smoking, vaping, or in food) or “**synthetic marijuana**” (like “K2,” “Spice”)?
3. Use **anything else to get high** (like other illegal drugs, prescription or over-the-counter medications, and things that you sniff, huff, or vape)?

Part B. CRAFFT:

- **Car**
- **Relax**
- **Alone**
- **Forget**
- **Friends, Family**
- **Trouble**

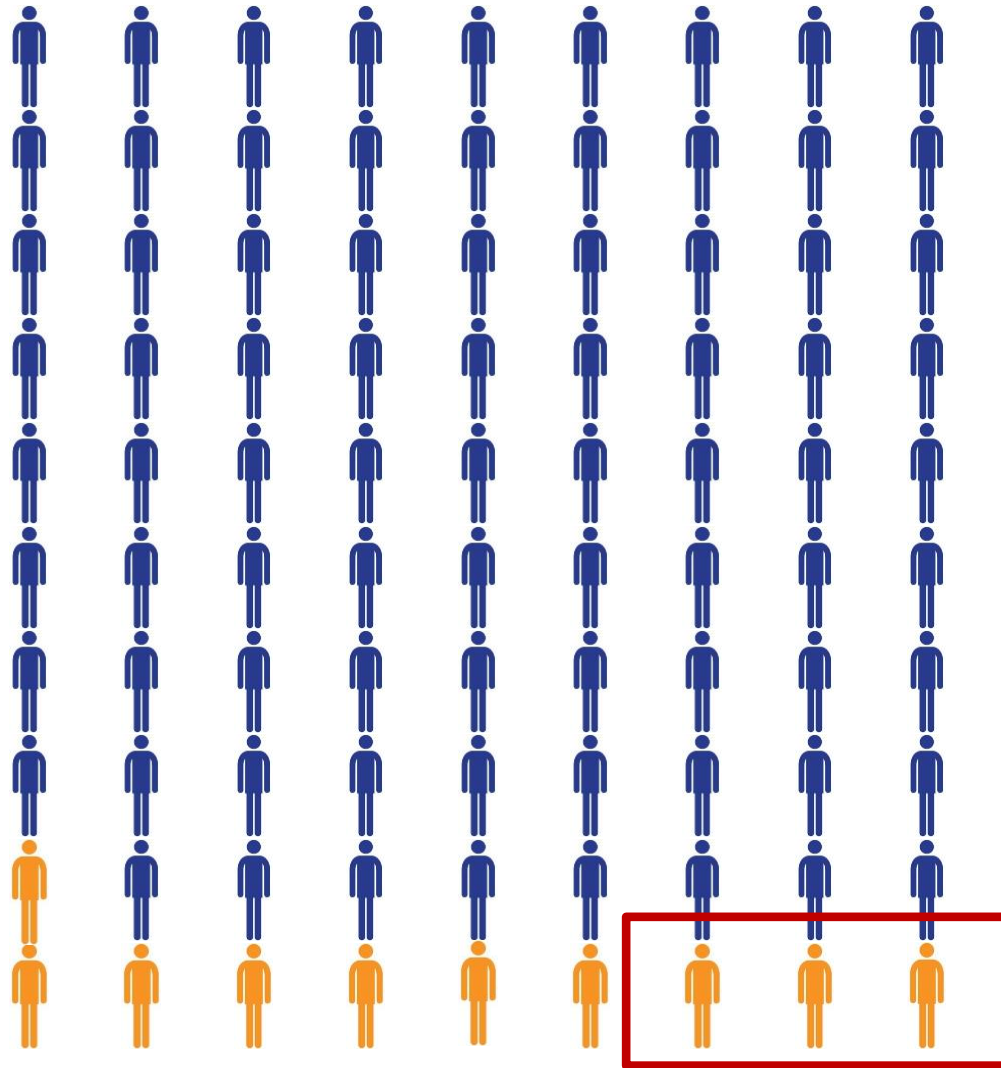
Used with permission, Boston Children's Hospital, 2018.

Risk of SUD Based on CRAFFT



Mitchell SG, et al. *Subst Abus*, 2014;35(4), 376–80.
Figure used with permission, Boston Children's Hospital, 2018.

Who Receives Treatment?



NSDUH, 2016

What Does Treatment Look Like?

Medication

1. **Buprenorphine:**
Partial opioid agonist
2. **Naltrexone:**
Opioid antagonist
3. **Methadone:**
Full opioid agonist

*Recommended by the AAP;
randomized clinical trials
show fewer relapses, fewer
cravings for opioids, longer
retention in care*

Behavioral Therapy

- Motivational enhancement
- Cognitive behavioral therapy
- Contingency management

*Best modality not known,
and a combo may work best;
critical component of
treatment, since dual
diagnoses rule, not exception*

American Society of Addiction Medicine, Principles of Addiction Medicine, 2015

Available Medications

Buprenorphine	Naltrexone	Methadone
Partial opioid agonist	Opioid antagonist	Full opioid agonist
FDA-approved ≥16 yrs	FDA-approved ≥18 yrs	Limited <18 yrs
Reduces withdrawal and cravings	Reduces cravings only (used incorrectly, causes withdrawal)	Reduces withdrawal and cravings
Daily dose (film/tablet); monthly dose (injection); semi-annual dose (implant)	Daily dose (tablet); monthly dose (injection)	Daily dose
Can be provided by primary care clinician (after obtaining DEA waiver)	Can be provided by primary care clinician (no special training required)	Only administered in person at qualified methadone center

ASAM, Principles of Addiction Medicine, 2015

Should Youth Receive Meds...?

American Academy
of Pediatrics



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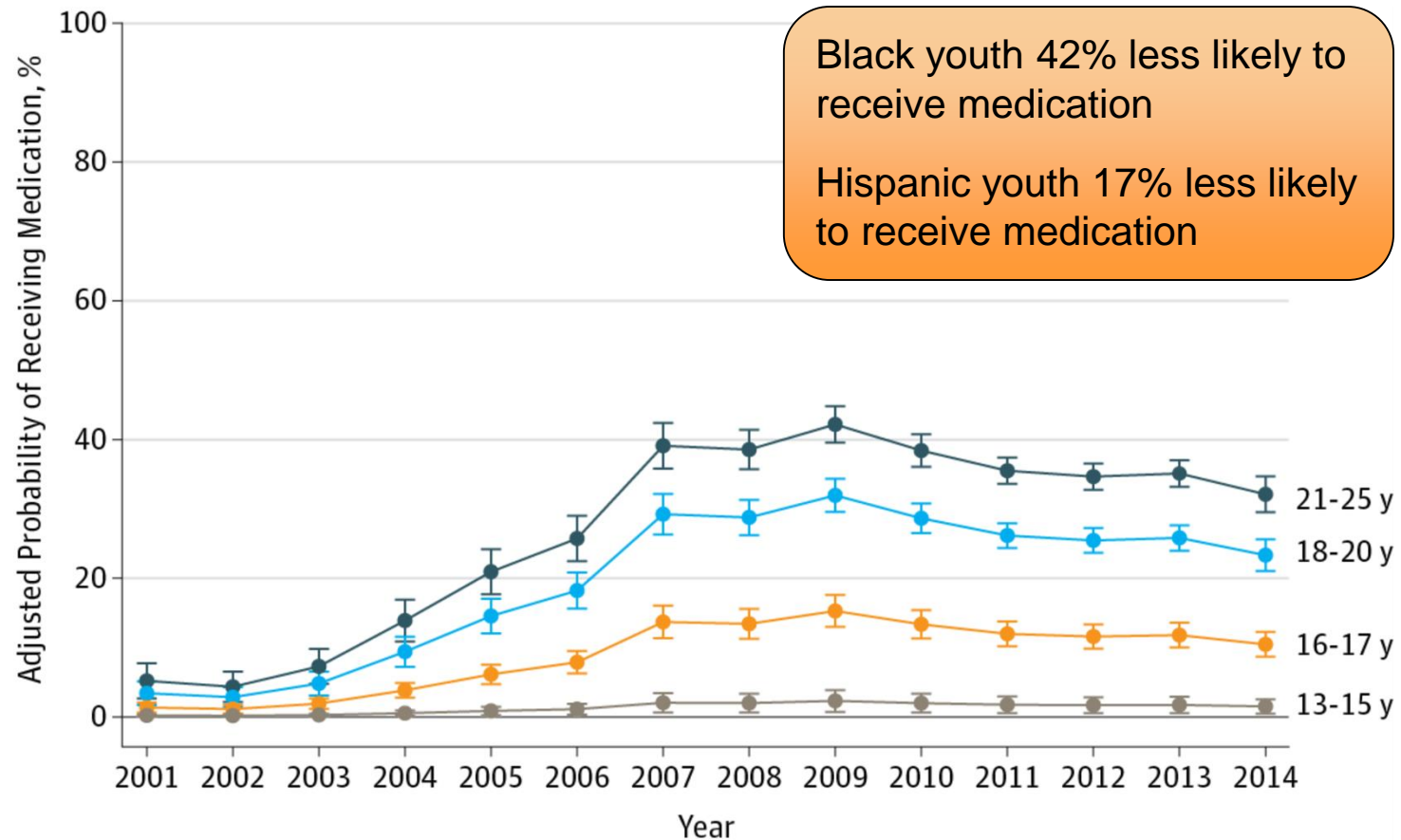
Medication-Assisted Treatment of Adolescents With Opioid Use Disorders

COMMITTEE ON SUBSTANCE USE AND PREVENTION

The AAP recommends that pediatricians consider offering medication-assisted treatment to their adolescent and young adult patients with severe opioid use disorders or discuss referrals to other providers for this service.

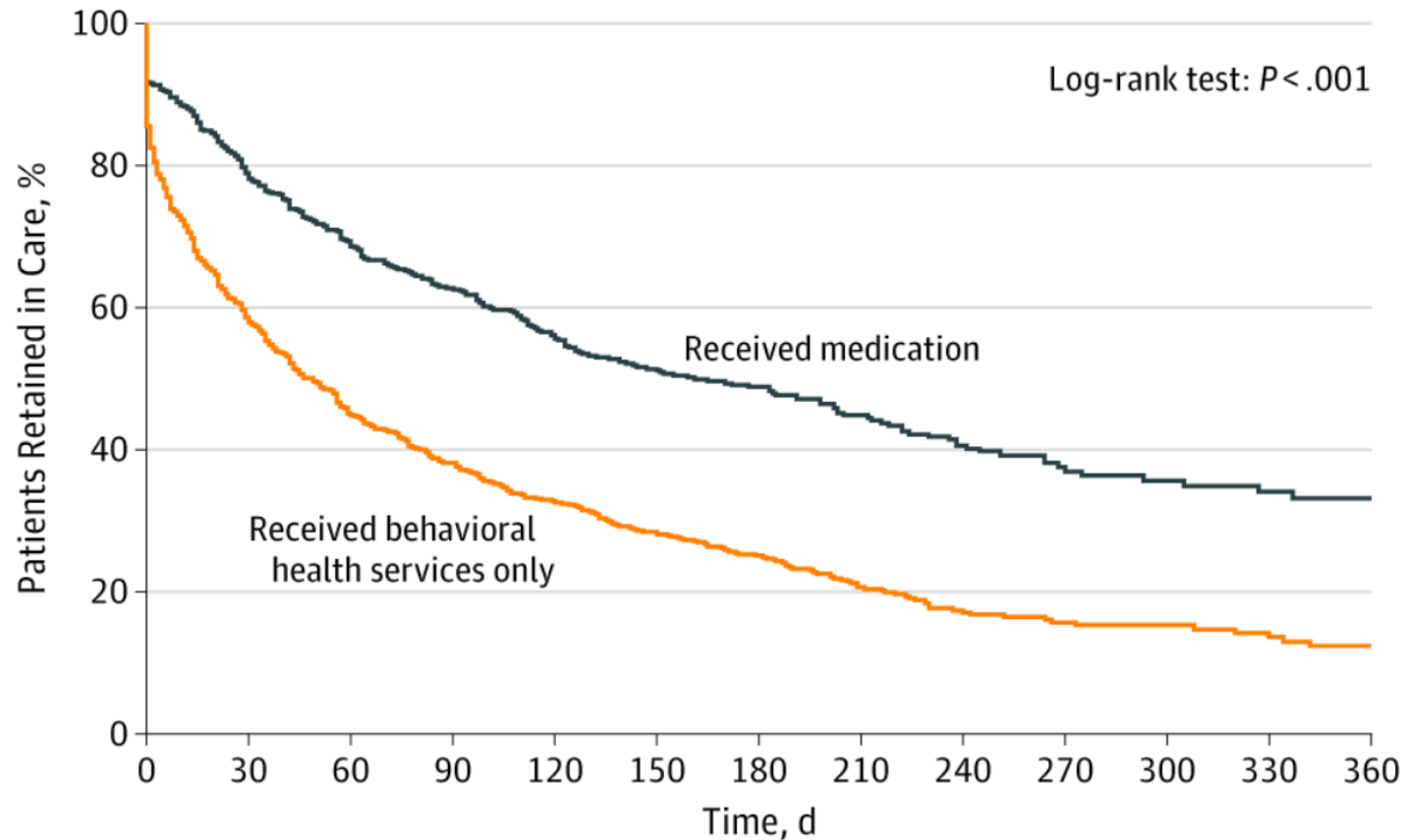
AAP Committee on Substance Use and Prevention, August 2016

Buprenorphine & Naltrexone



Hadland SE, et al. *JAMA Pediatr*, 2017;171(8):747-755.

Retention in Addiction Care



Hadland SE, et al. *JAMA Pediatr*, 2018;172(11):1029-1037.

Retention in Addiction Care

Treatment Received	Median Retention in Care	% Reduction in Attrition from Treatment (95% CI)
Behavioral health only	67 days	<i>Reference</i>
Buprenorphine	123 days	42% (36 - 48%)
Naltrexone	150 days	46% (31 - 57%)
Methadone	324 days	68% (53 - 78%)

** HR adjusted for age, sex, race/ethnicity, disability, pregnancy, comorbid mental health diagnoses, other substance use disorders, acute and chronic pain conditions, and receipt of higher levels of care*

Hadland SE, et al. *JAMA Pediatr*, 2018;172(11):1029-1037.

Part 3:

Unique Aspects of Treating Teens

Case Scenario

A 17-year-old female presents with her mother and wants to initiate buprenorphine for opioid use disorder. She is currently in a residential treatment program that does not offer medication but can provide to the patient on-site if it is prescribed by an outside provider. She was diagnosed with hepatitis C virus 1.5 years ago and has not received treatment.

The patient has a 2-year history of heroin use. She first sniffed it, and quickly transitioned to injection use shortly after. She has been in addiction treatment 6 times, but has never received any medication for addiction treatment. She also uses cocaine intranasally on average twice per month, and smokes 5-10 cigarettes per day.

What's Different About Teens?

- **Transitional age**
 - Transitions include increasing autonomy, housing, education, employment, health insurance
- **Ambivalence regarding treatment**
 - May be encouraged to receive treatment by concerned family members, or may be justice- or state system-involved; motivation may not come fully from within
 - May be more likely to seek treatment “on demand”, and motivation may fluctuate
- **May still be learning how to navigate the health system for themselves**
 - May miss appointments and/or arrive late
- **Often have never received medications for addiction treatment**
 - An opportunity for you as a provider!
- **Early in the trajectory of addiction and its harms**
 - May be *more* treatment responsive than adults

What Should Be Offered?

The same services that are offered to adults:

- Medication (buprenorphine, naltrexone, methadone)
- Hepatitis C treatment
- Screening (HIV, hepatitis A/B, STI screening)
- Reproductive health services
- Overdose education and naloxone prescription
 - Don't use alone, call 911 in case of overdose (many adolescents not aware of Good Samaritan laws), avoid polysubstance use
- Smoking cessation (bupropion, nicotine replacement)
- Motivational interviewing to reduce substance use
- Referral for behavioral health (including screening for depression, anxiety, trauma, ADHD)
- Screening for social determinants of health

Harm Reduction

- Remember that ***addiction is a chronic illness that often has cycles of recovery and relapse***

■ Even when young people are not ready for treatment, **Distribution of safe injecting equipment, syringe exchange, overdose prevention, and other harm reduction services are not associated with increased drug use or decreased cessation of drug use.**

- Engagement in these services allows youth to more easily obtain treatment when they are ready

Overdose Prevention

The safest option is to not use street drugs. But if you are going to use:



Don't use alone, always have a sober friend nearby.

Start with a little bit to see how it affects you.



Mixing drugs with alcohol can increase the chance of overdose.

Make a plan & know how to respond in case someone overdoses (see reverse).



Vancouver Coastal Health, 2017

Educate About Naloxone

- **Recommended by US Surgeon General**
- Overdose reversal agent (opioid antagonist)
 - Different from naltrexone (for long-term addiction treatment)
- Now available in easy nasal spray at higher dose (4 mg)
 - May still need multiple administrations to reverse fentanyl overdose
- Given out free from health departments
- Can be prescribed in the US; covered by insurance



Massachusetts Department of Public Health, 2017
SAMHSA, 2016

What Should Be Offered?

Some considerations unique to adolescents:

- Obtain consent to speak to collateral providers and trusted adults
- Explain that parental involvement generally leads to improved outcomes
- Review confidentiality and the limits thereof
- Discuss use of urine drug tests as means of identifying need for additional support, rather than as way of 'catching' teens
- Consider alternative modes of contact (e.g., text, email, if HIPAA-compliant)
- Be aware that state involvement is sometimes required
- Be aware that copays can be particularly difficult if teens have limited family financial support

Recommendations for Parents

- Parents often have more leverage than they realize, and can set 'house rules'
- Recommendations regarding structure:
 - No substance use in the home
 - Set a curfew, and prohibit risky activities (e.g., parties) and driving until in stable recovery
 - Ensure attendance at all medical appointments
 - Hold, dispense, and observe medication doses
- Recommend parents do not use substances
- Review the 7 C's:
 - Cash, computer, curfew, cell phone, car, credit cards

Case Conclusion

You initiate buprenorphine, and the patient stabilizes on a dose of 8 mg sublingually daily. Her cravings are substantially reduced. She undergoes further evaluation to start hepatitis C treatment with a direct-acting antiretroviral medication. You provide reproductive health counseling, and she decides to have an etonogestrel implant placed.

She continues to attend appointments, often with her mother. When her mother does not attend appointments, she is often 20-30 minutes late, and sometimes does not come at all. However, she remains stable on buprenorphine, does not use opioids (and urine drug testing confirms this), and reduces her cocaine use. She successfully completes 8 weeks of treatment for hepatitis C. She starts a part-time job and wants to return to school.

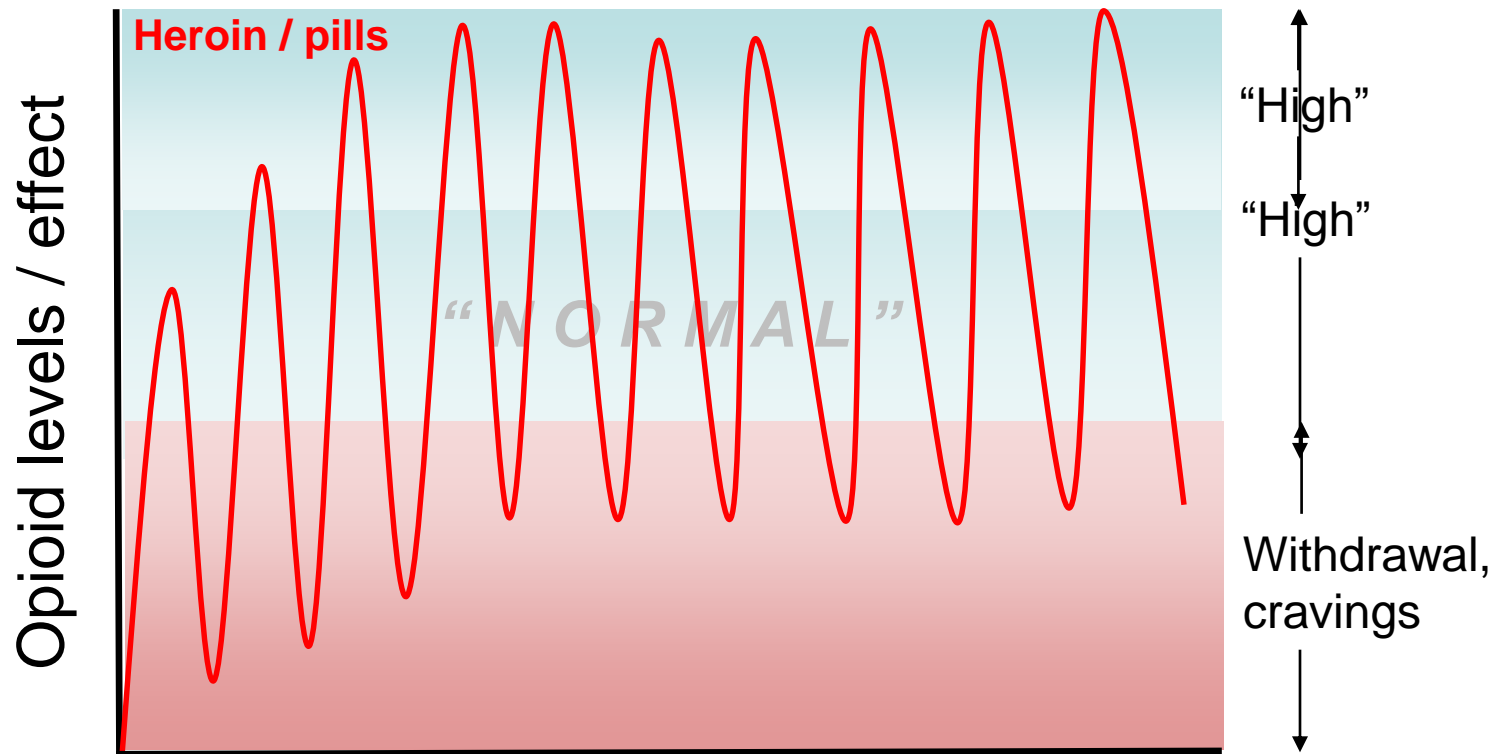
Thank You!

- Tanya Applegate, Jason Grebely, and staff at the Kirby Institute
- Funding support from National Institute on Drug Abuse (K23 DA045085), Thrasher Research Fund, Academic Pediatric Association, Division of General Pediatrics at Boston University School of Medicine

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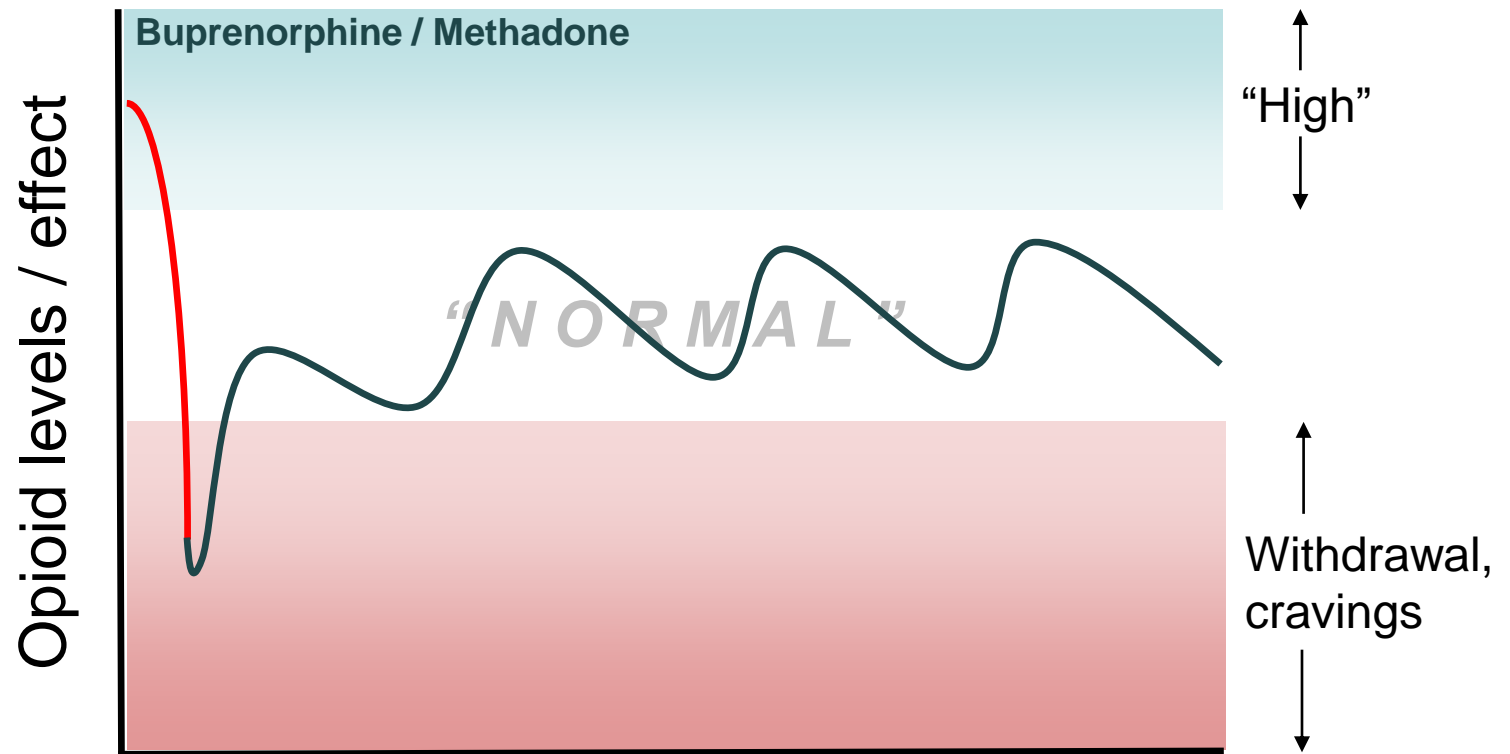
Twitter: @DrScottHadland

Rationale for Opioid Agonists



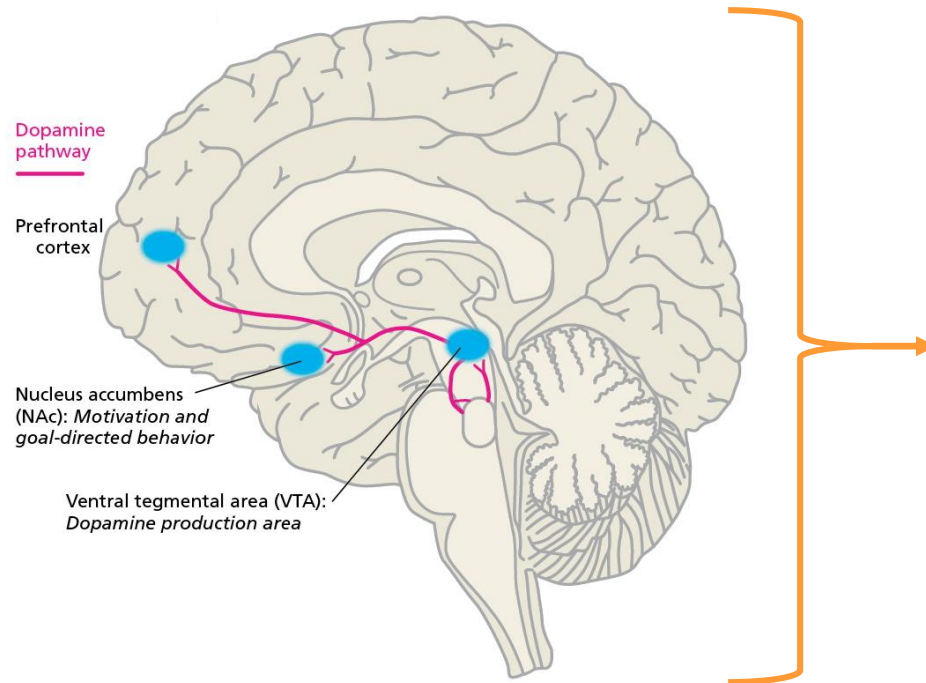
Adapted from: ASAM, Principles of Addiction Medicine, 2015

Rationale for Opioid Agonists



Adapted from: ASAM, Principles of Addiction Medicine, 2015

Rationale for Naltrexone



Naltrexone (antagonist):

1. Blocks the 'high' from taking opioids
2. May reduce cravings in some patients (similar mechanism to when used for alcohol use disorder)

Mu-opioid receptors are highly concentrated in the VTA and NAc.

Endogenous and exogenous opioids activate the reward pathway by binding in both regions.



Connor JP, et al. *Lancet*, 2015;387(10022):988-98.