



# **The Opioid Epidemic and Youth**

## **National Trends and Evidence-Based Practice for Preventing Adolescent Misuse and Addiction**

**Sharon Levy, MD, MPH**

*Associate Professor of Pediatrics,  
Harvard Medical School*

*Director, Adolescent Substance Abuse Program  
Boston Children's Hospital*

# Disclosures

I, Sharon Levy, have no relevant financial or commercial relationships to disclose.

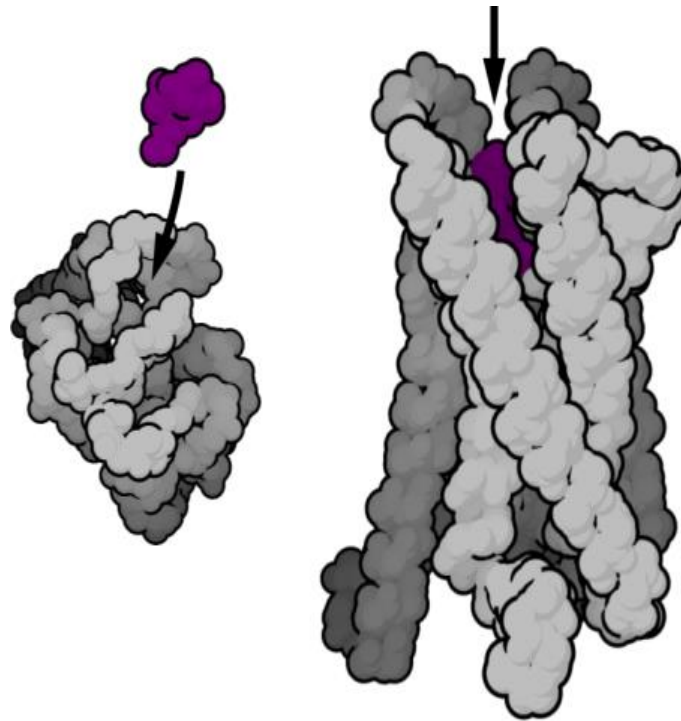


# Opiates

# Opioids



# Opioid pharmacology

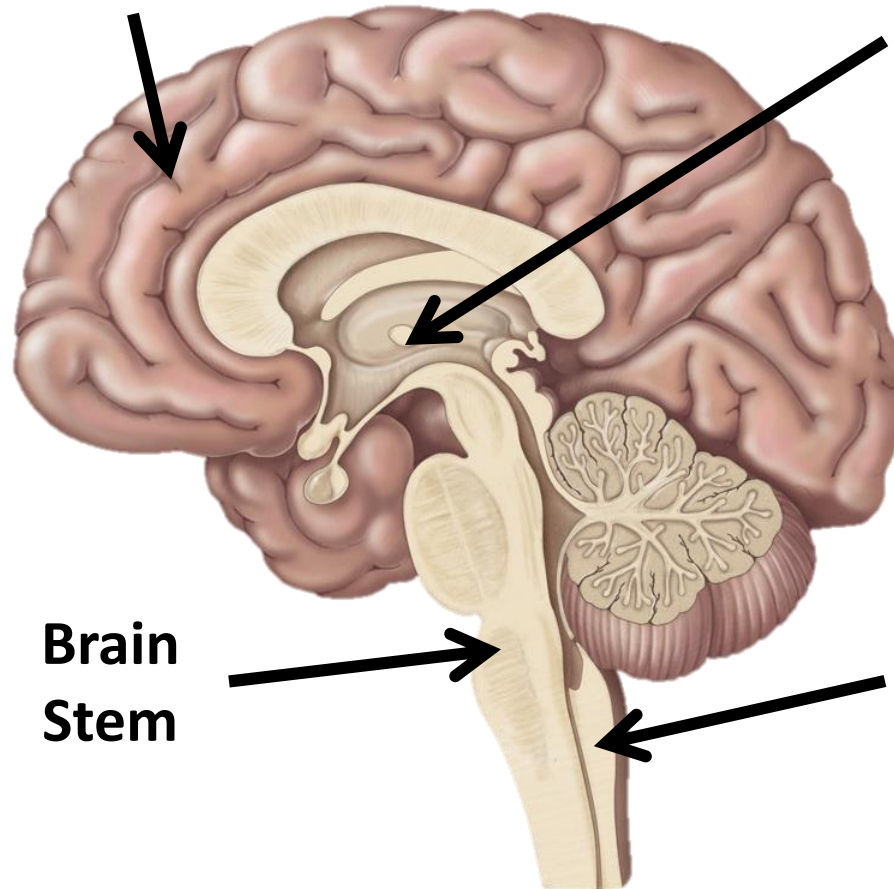


Opioid  $\mu$ -receptor and agonist

# Opioid neurobiology

**Prefrontal Cortex**

**Limbic System**

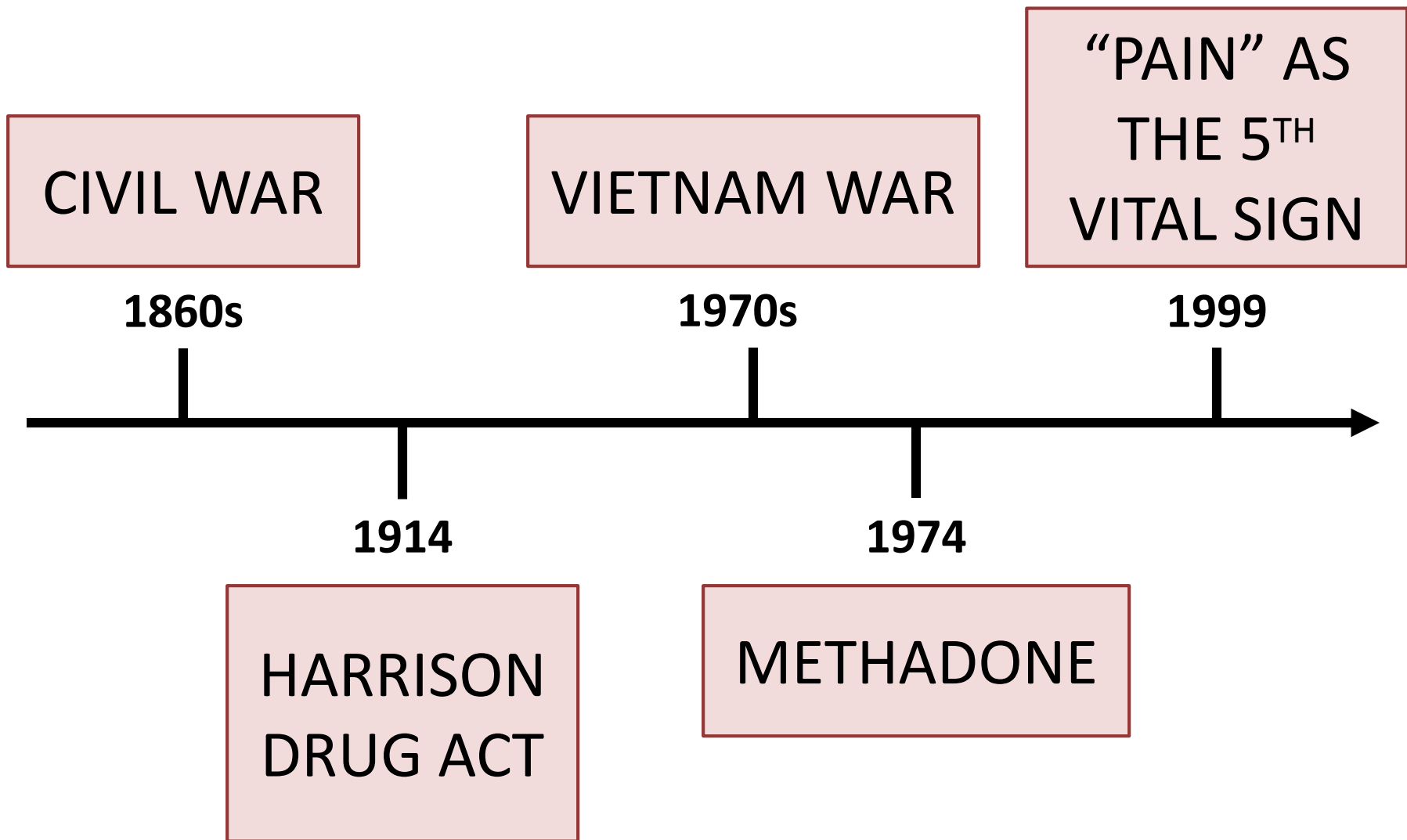


**Brain Stem**

**Spinal Cord**

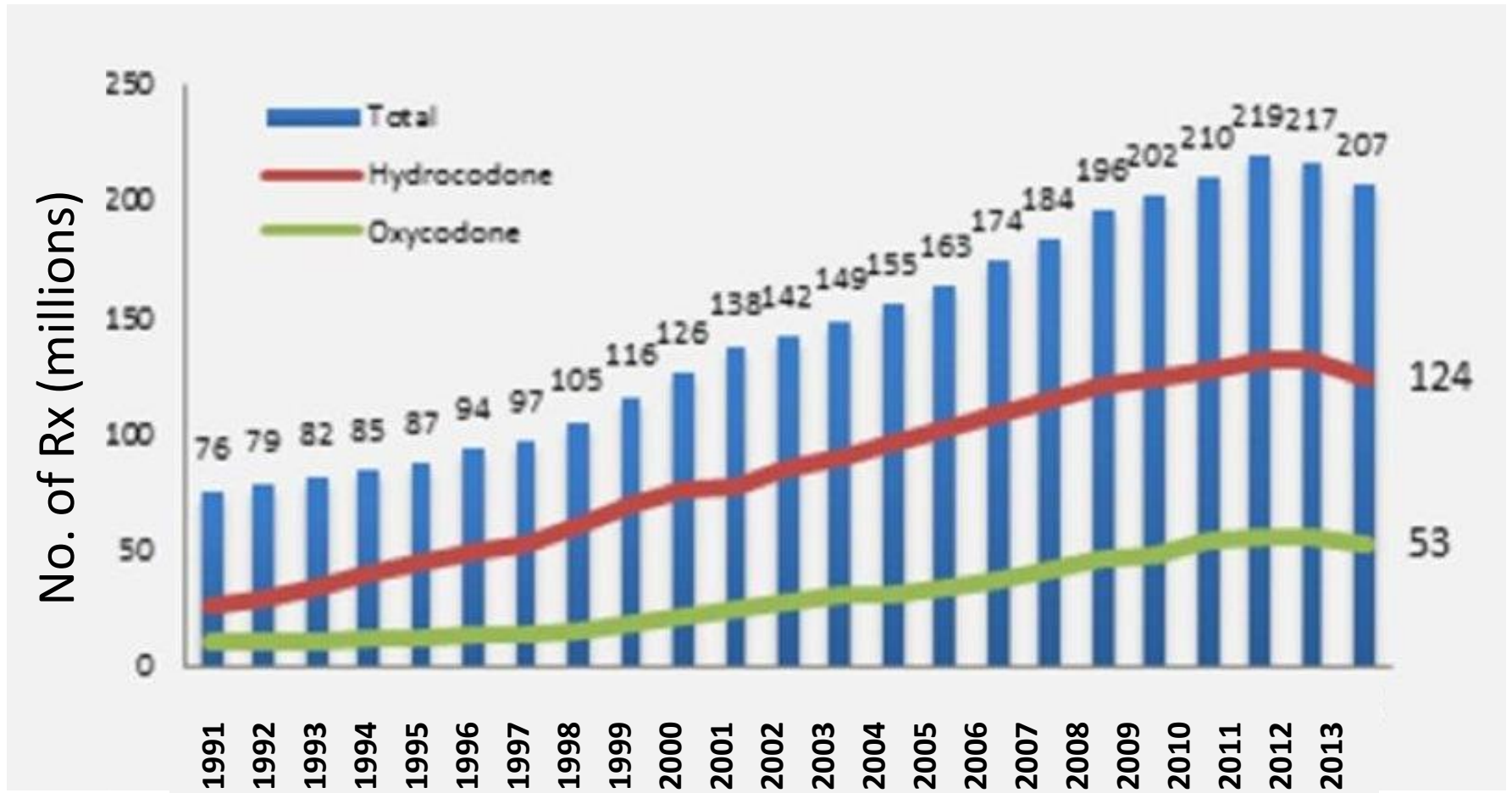








# Increase in Opiate Rx, 1991-2013



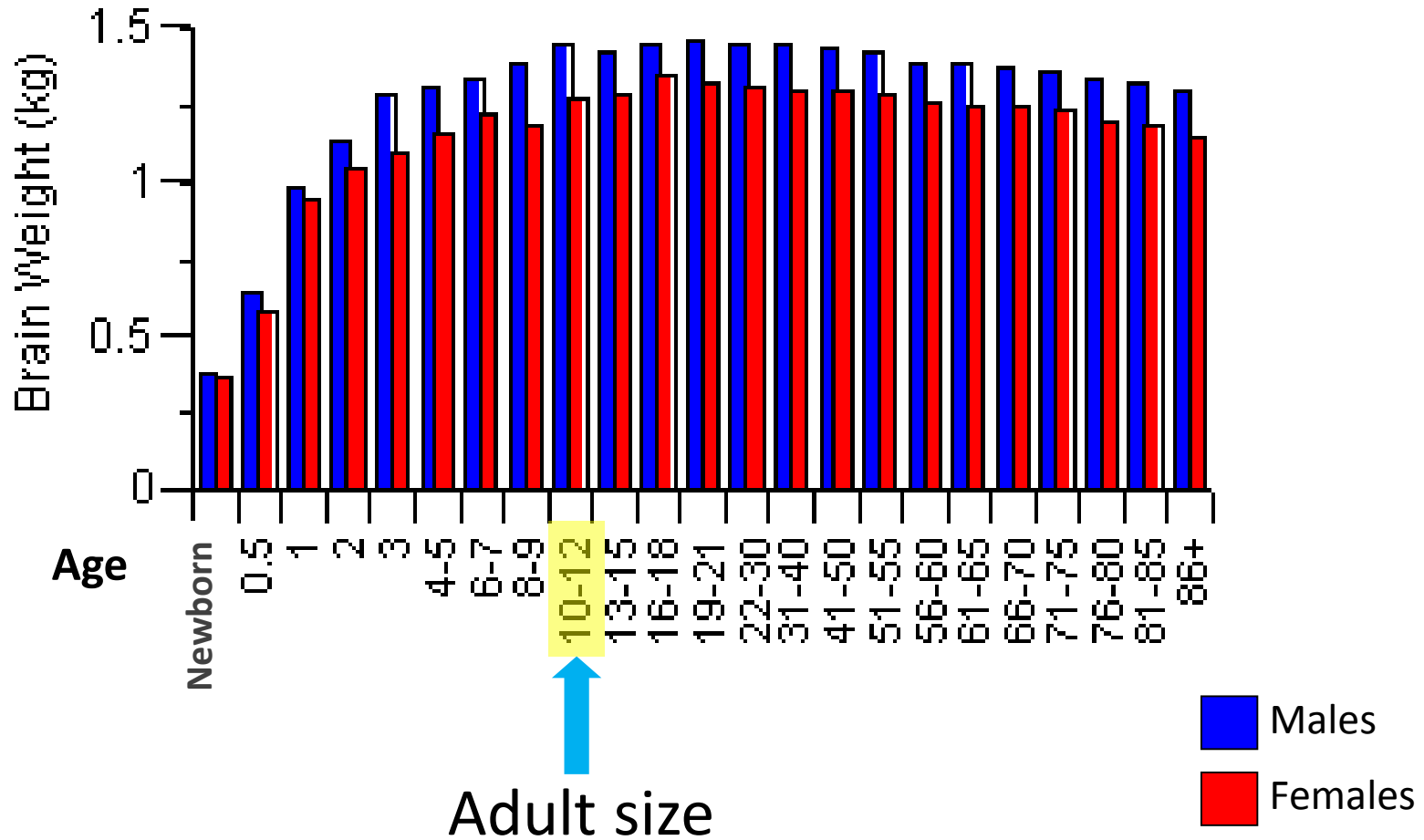
# The opioid reservoir

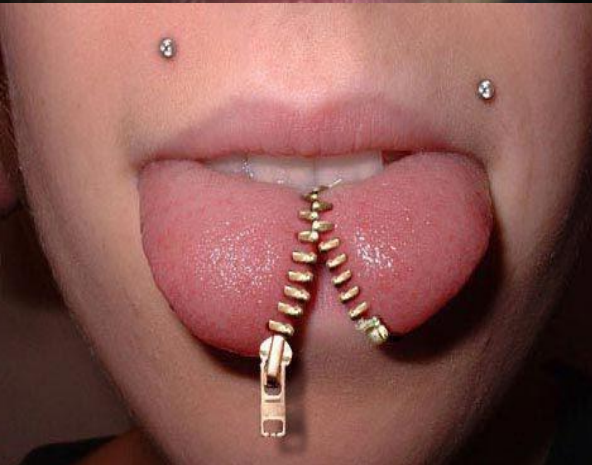


# Adolescents are **developmentally primed** to use drugs

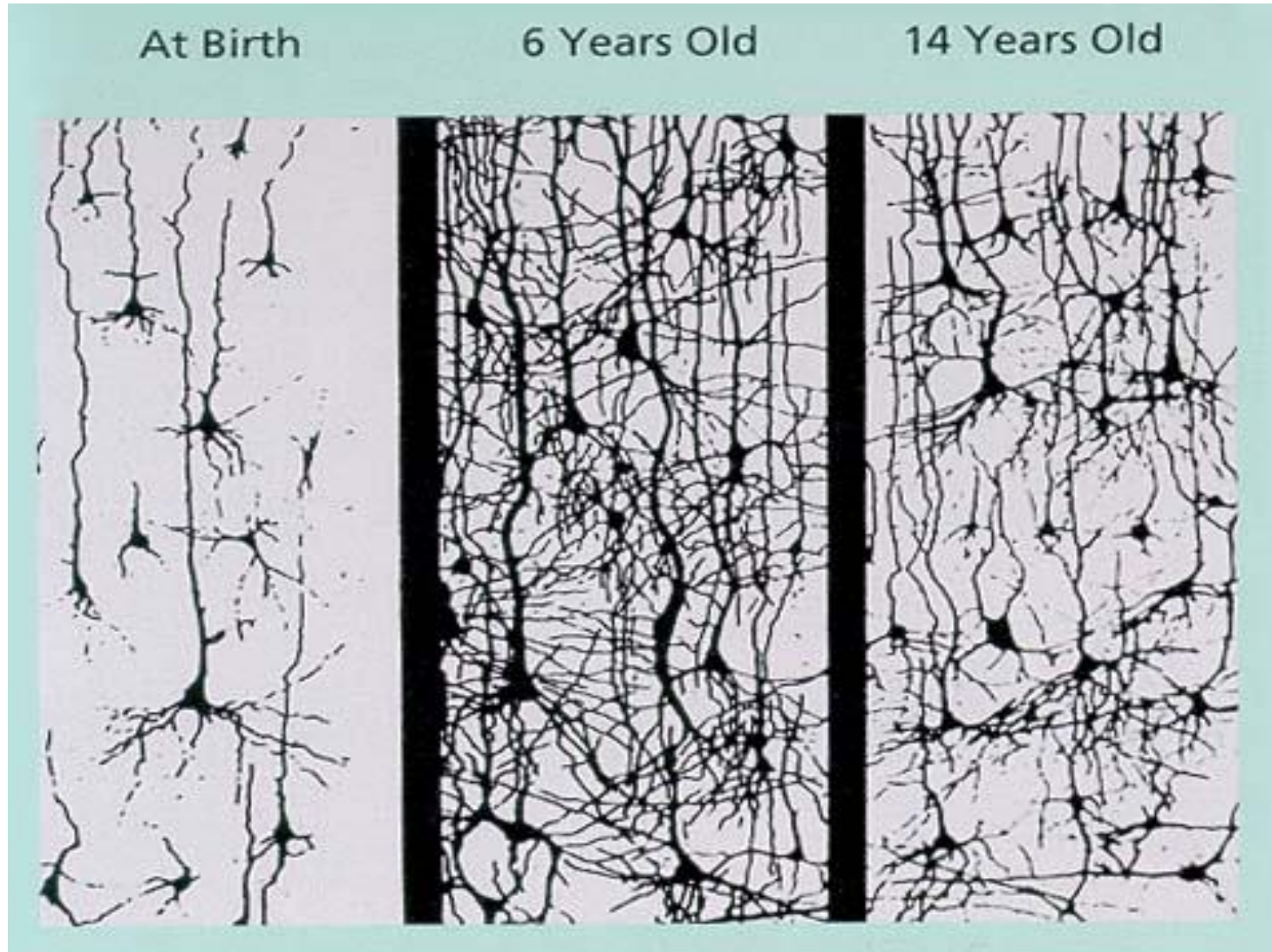


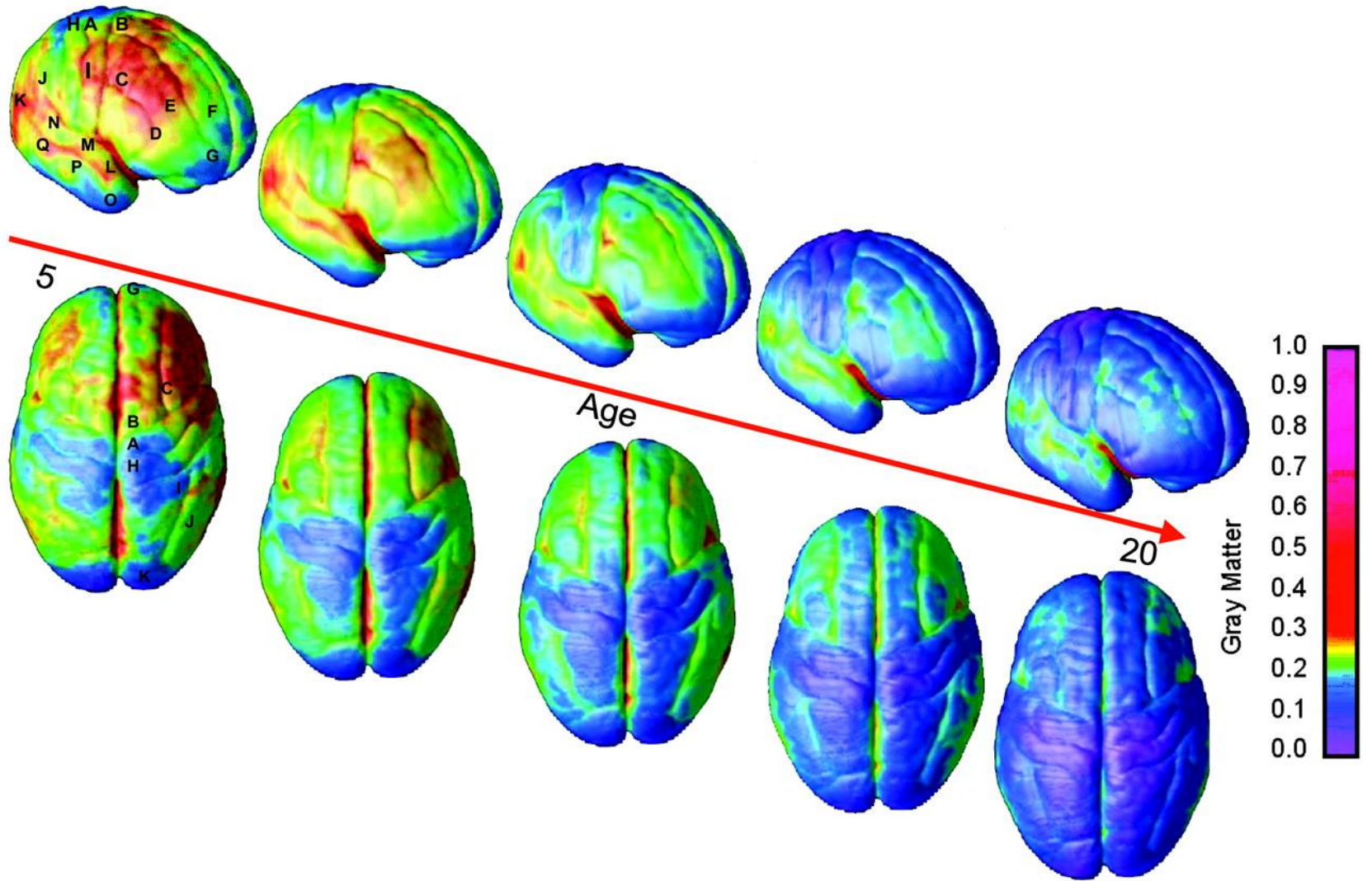
# Brain weight by age



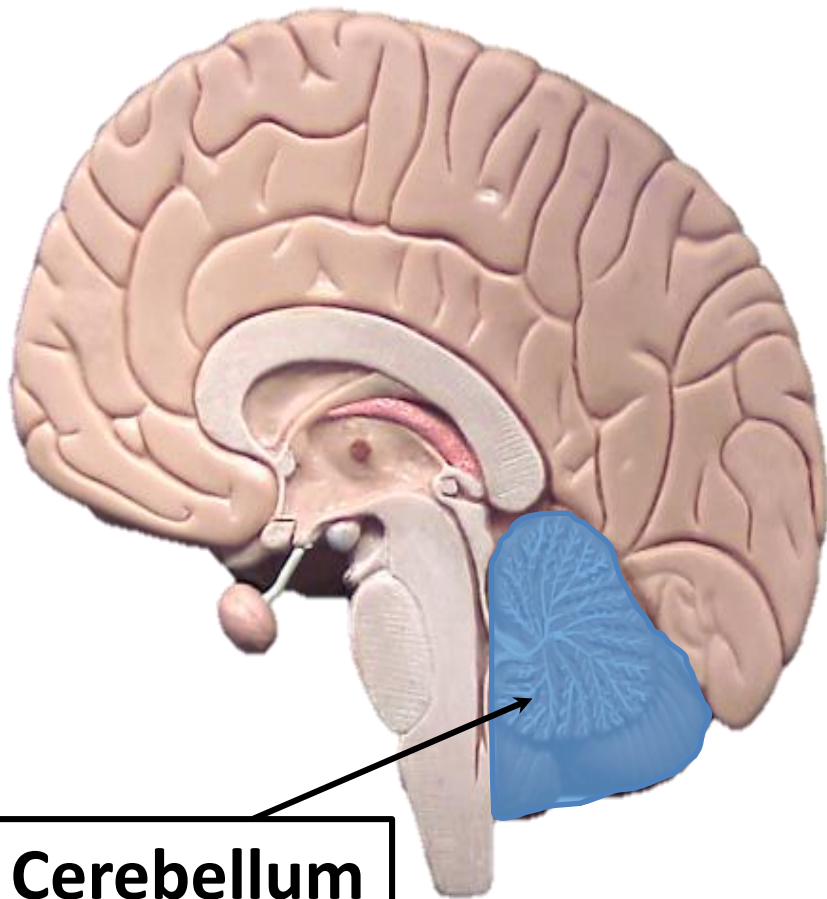


# Neuron growth in brain development



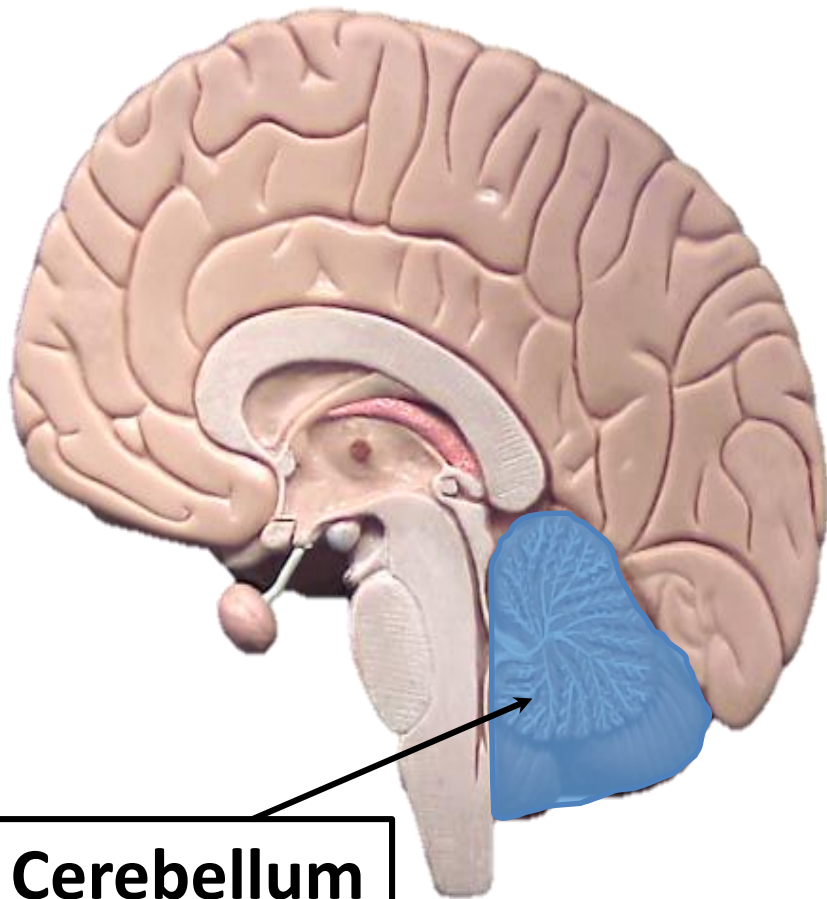


Source: Copyright (2004) National Academy of Sciences, U.S.A. Gogtay et al. PNAS. 2004;101(21):8174-8179. Retrieved on February 17, 2015 from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC419576/figure/fig3/>. Permission received from PNAS.



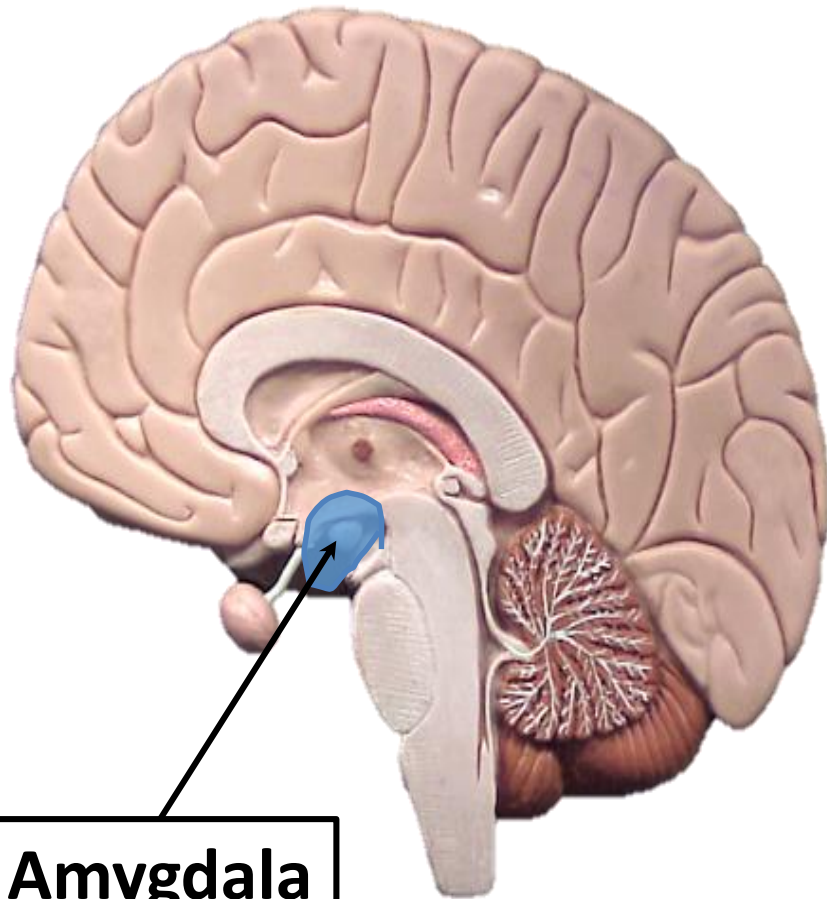
**Cerebellum**



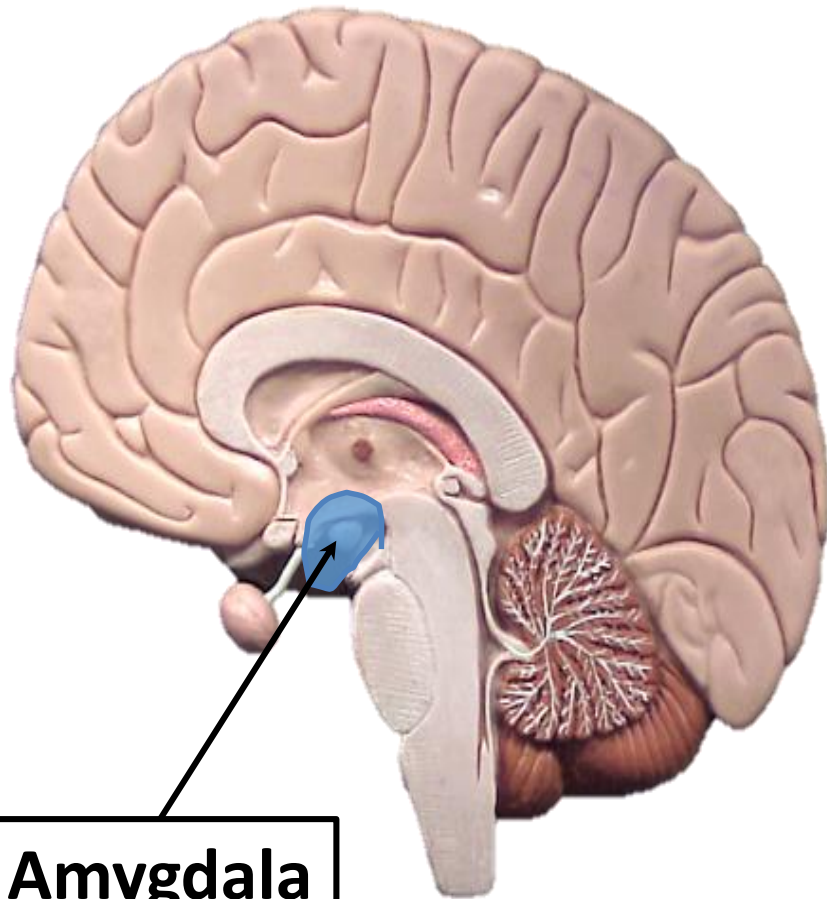


**Cerebellum**



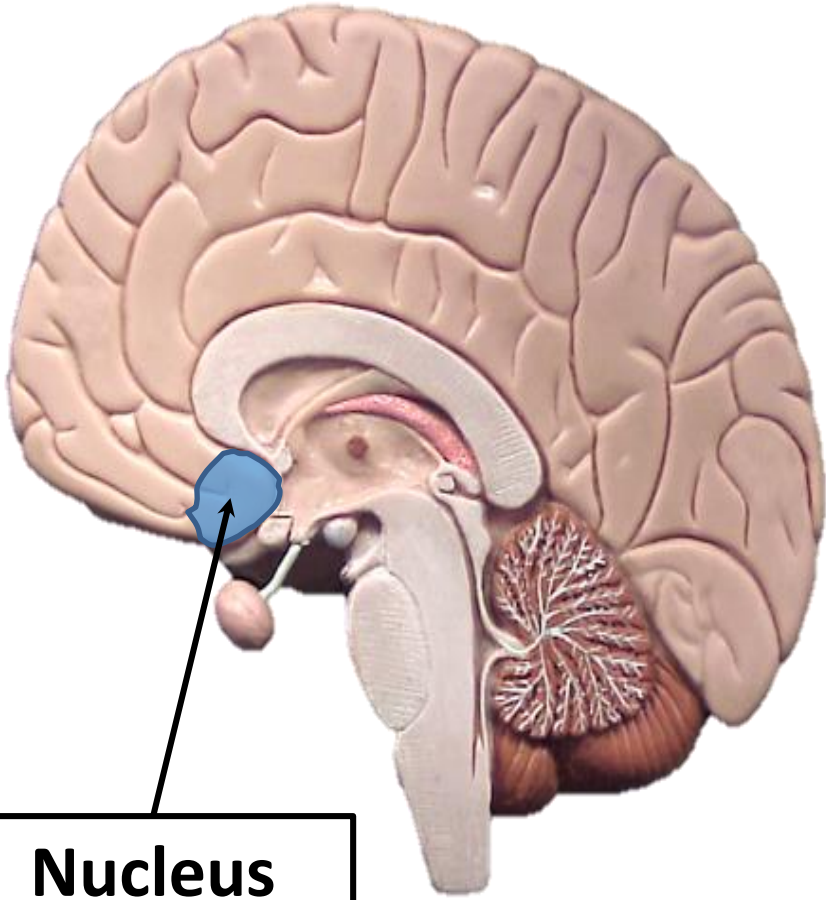


**Amygdala**

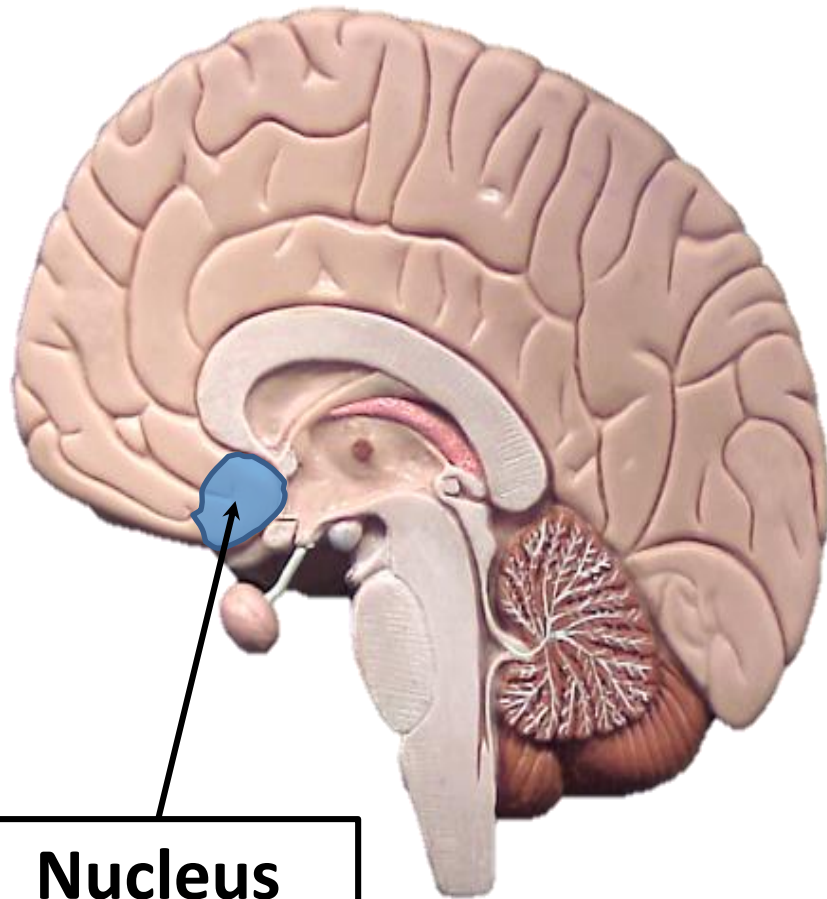


**Amygdala**



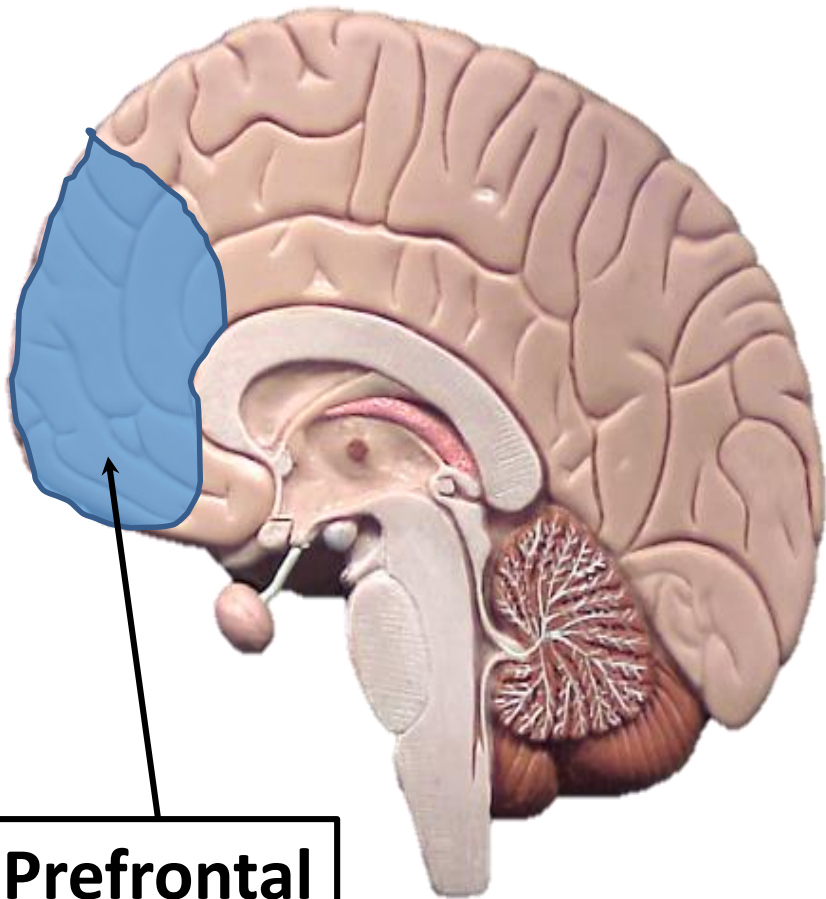


**Nucleus  
accumbens**

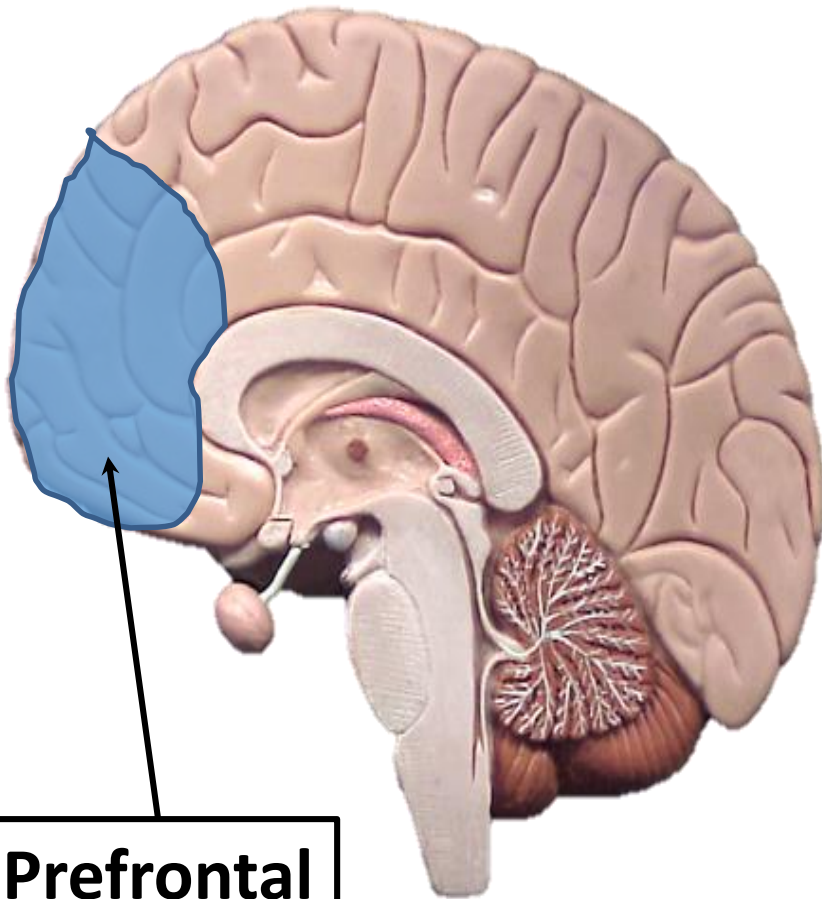


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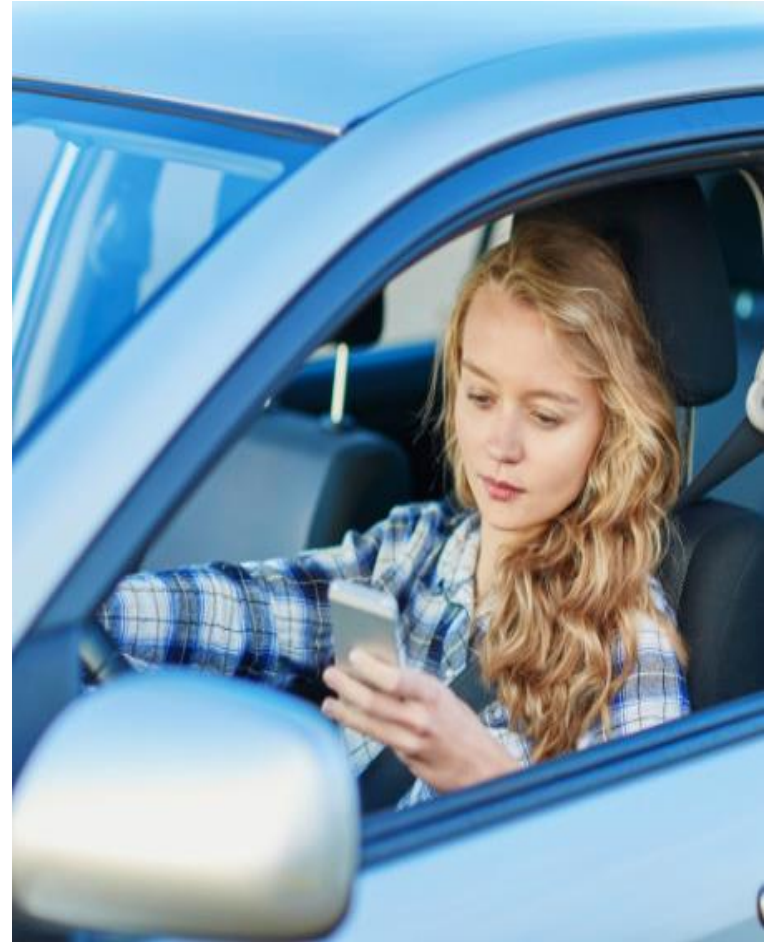


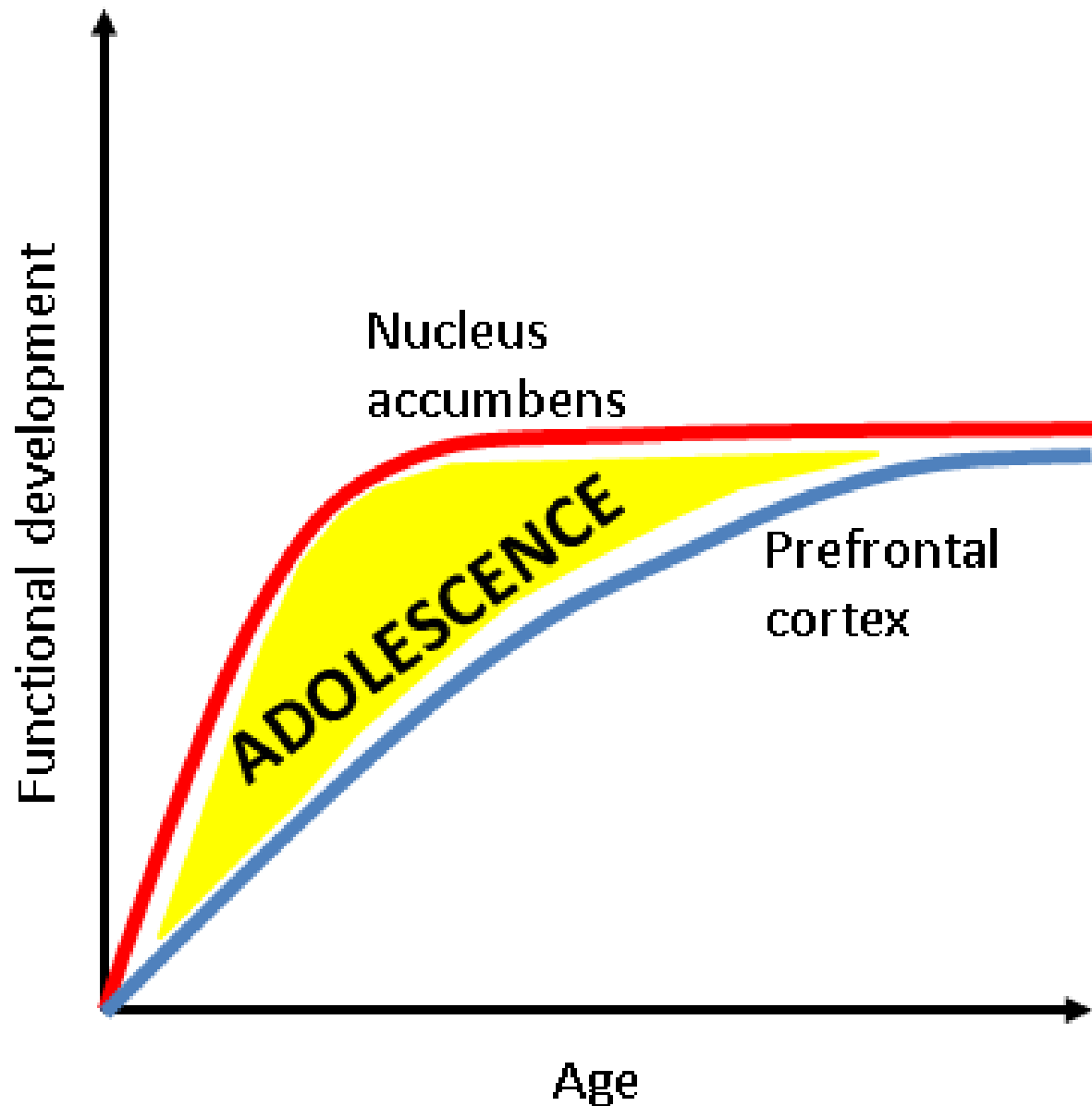


**Prefrontal  
cortex**

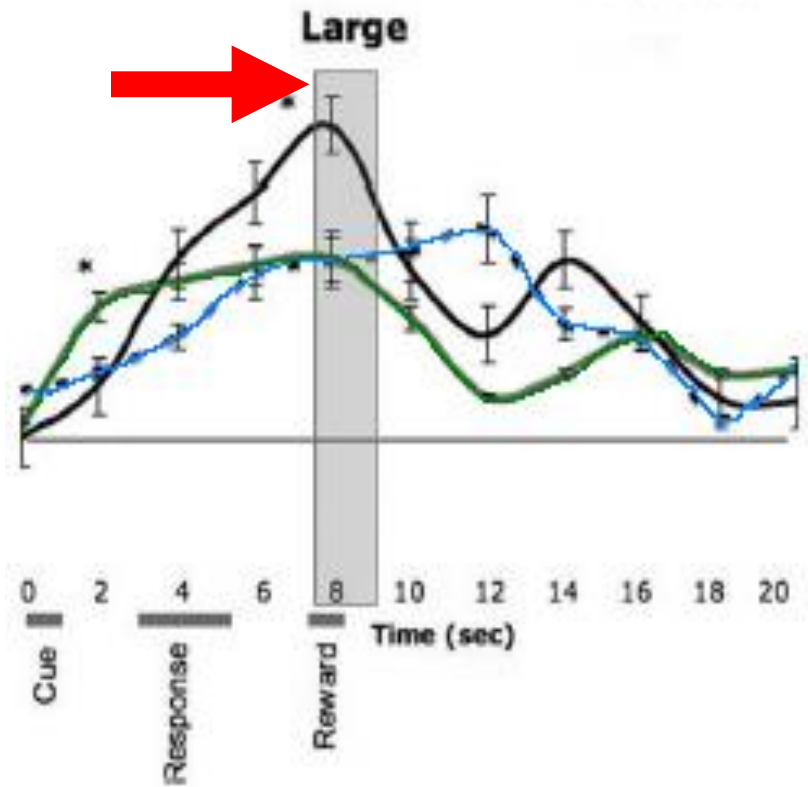
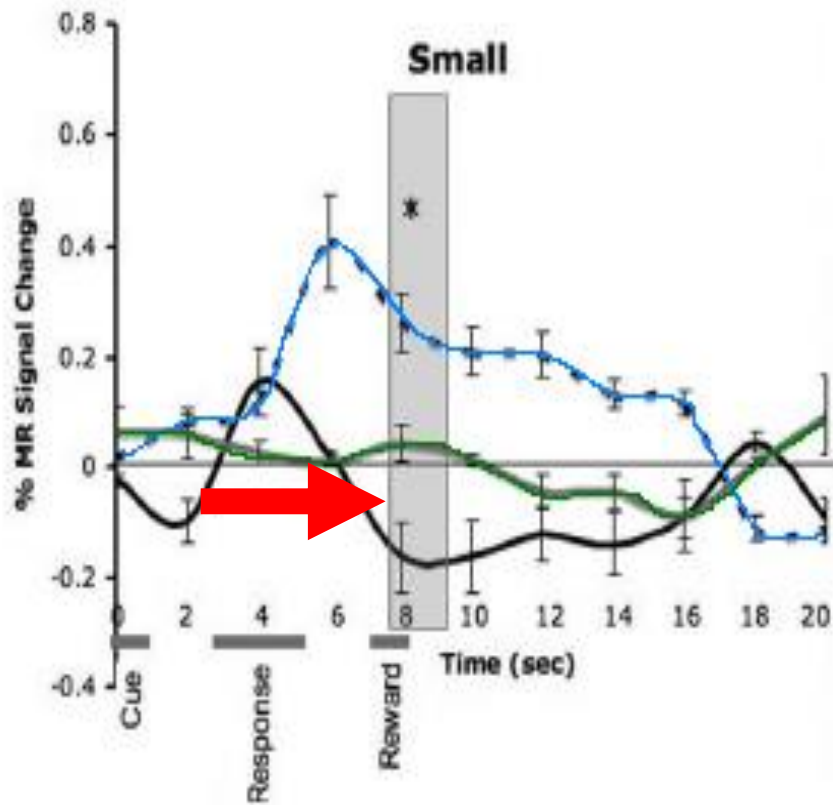


**Prefrontal  
cortex**



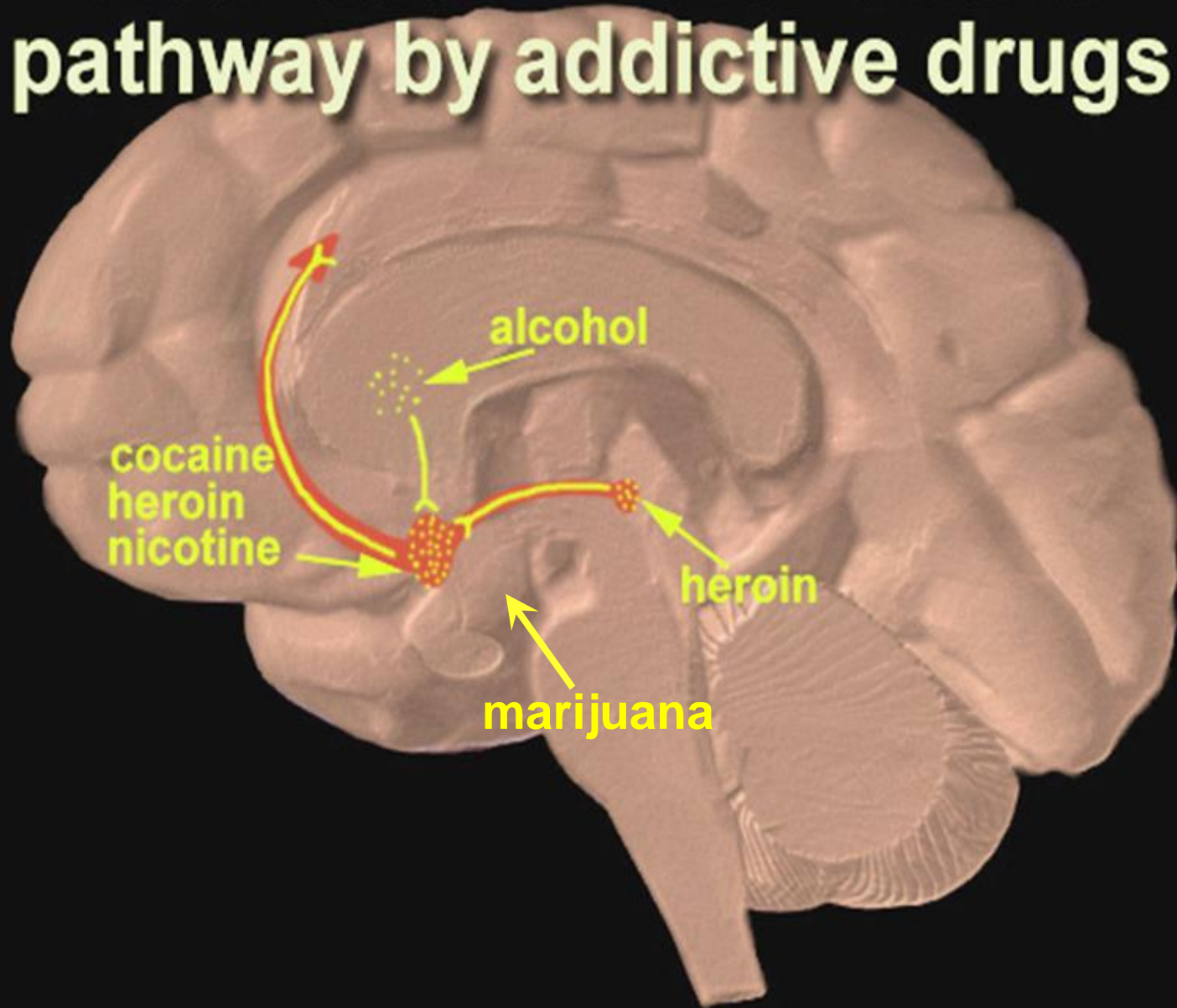




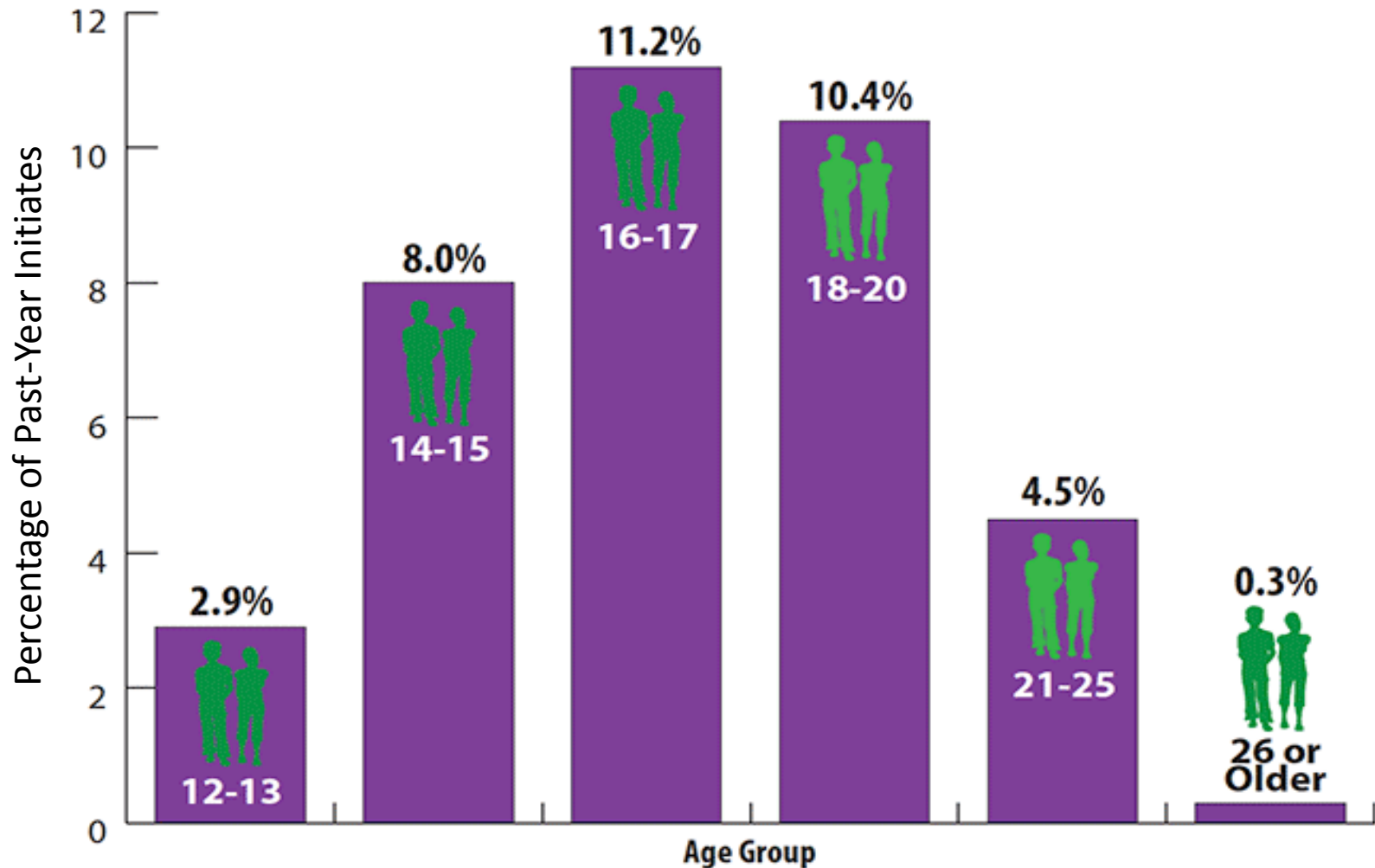


■ Children, ages 7-11     
 ■ Teens, ages 13-17     
 ■ Adults, ages 23-29

# Activation of the reward pathway by addictive drugs



# Most drug use starts in adolescence



Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2011 and 2012.

# The opioid reservoir

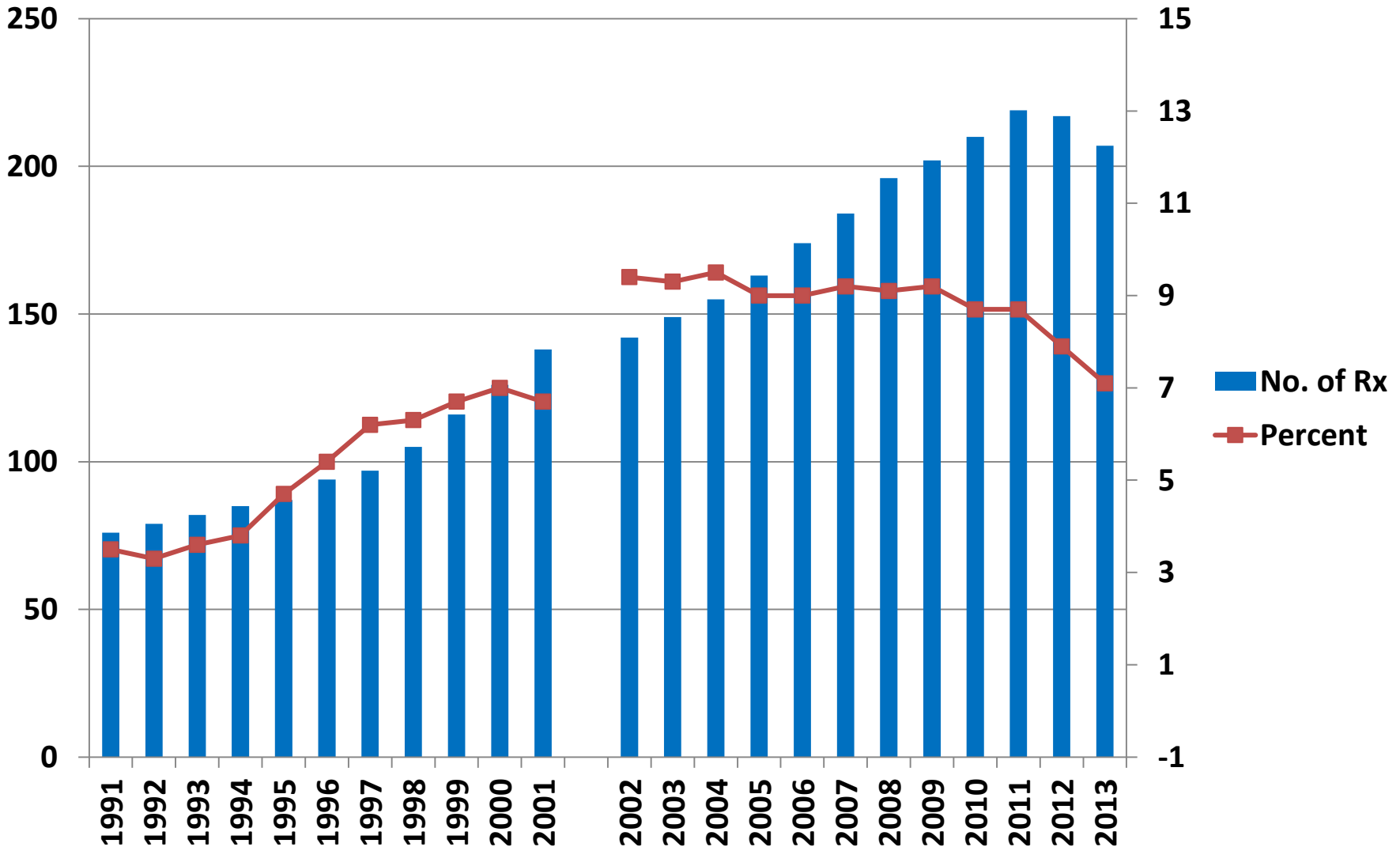


84.2%

of opioids obtained by adolescents  
were given by or taken from a  
family member or peer



# Opioid Prescriptions by proportion of 12<sup>th</sup> graders misusing of opioids



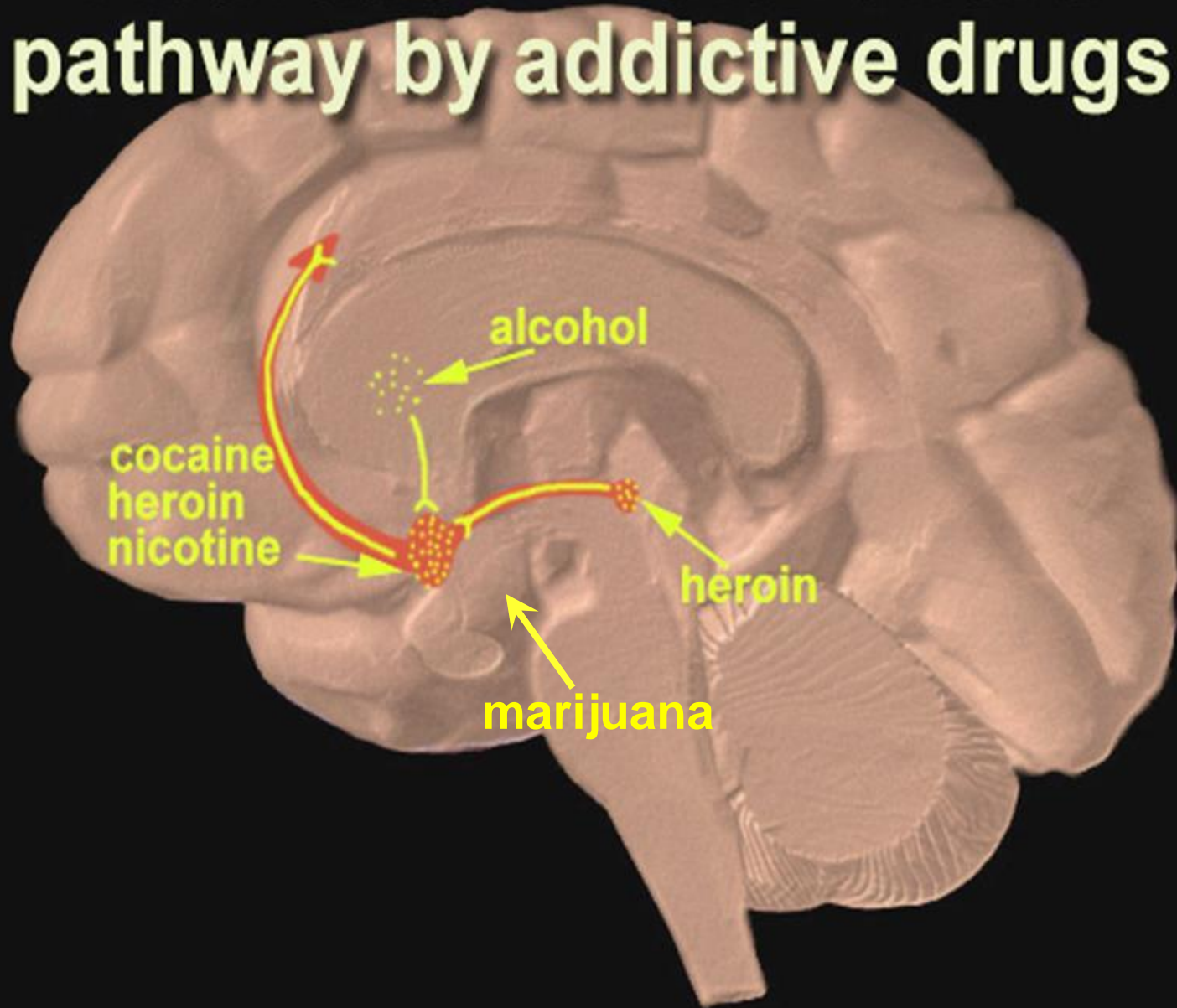
Source: Johnston LD, et al., Monitoring the Future – National Results on Adolescent Drug Use: Overview of Key Findings, 2016.

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# Adolescents are **developmentally vulnerable** to develop substance use disorders



# Activation of the reward pathway by addictive drugs







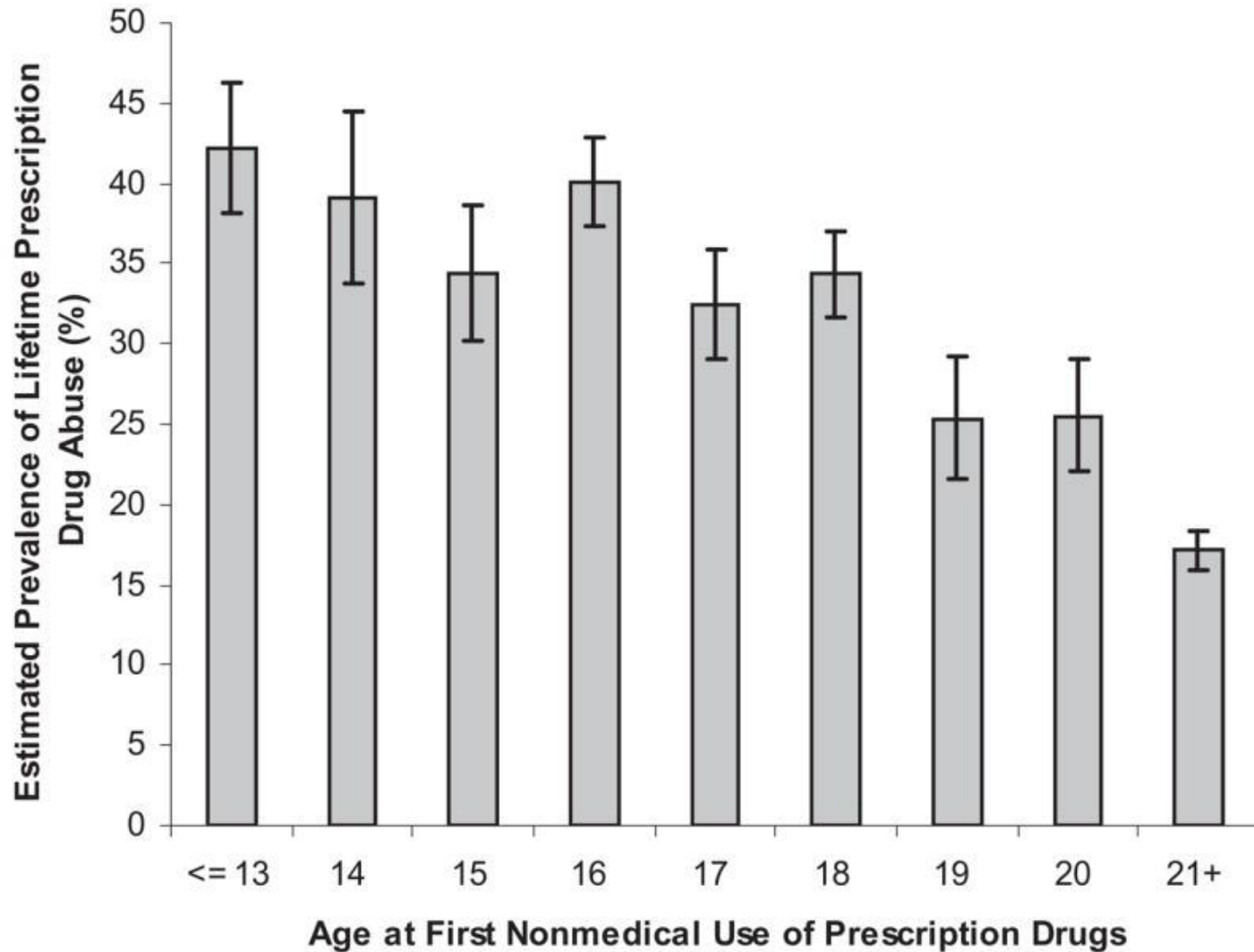


## Younger age\*

\*AOR decreases by 5% each year  
that non-medical use is delayed  
(after one year, **AOR: 0.95**  
with 95% CI 0.94-0.97)

**Sources:** Johnson, et al. (2015). Prescription Opioids in Adolescence and Future Opioid Misuse. Lynskey, et al. (2003). Escalation of drug use in early-onset cannabis users versus co-twin controls. McCabe et al. (2007). Does early onset of non-medical use of prescription drugs predict subsequent prescription drug abuse and dependence? Boyd et al. (2009). Non-medical use of prescription analgesics. Boyd et al. (2006). Adolescents' Motivations to Abuse Prescription Medications.

# Age of onset of non-medical use of prescription drugs



# Gateway to opioid misuse





**Exposure to  
marijuana**

**AOR: 3.67**

(95% CI 1.02-13.14)

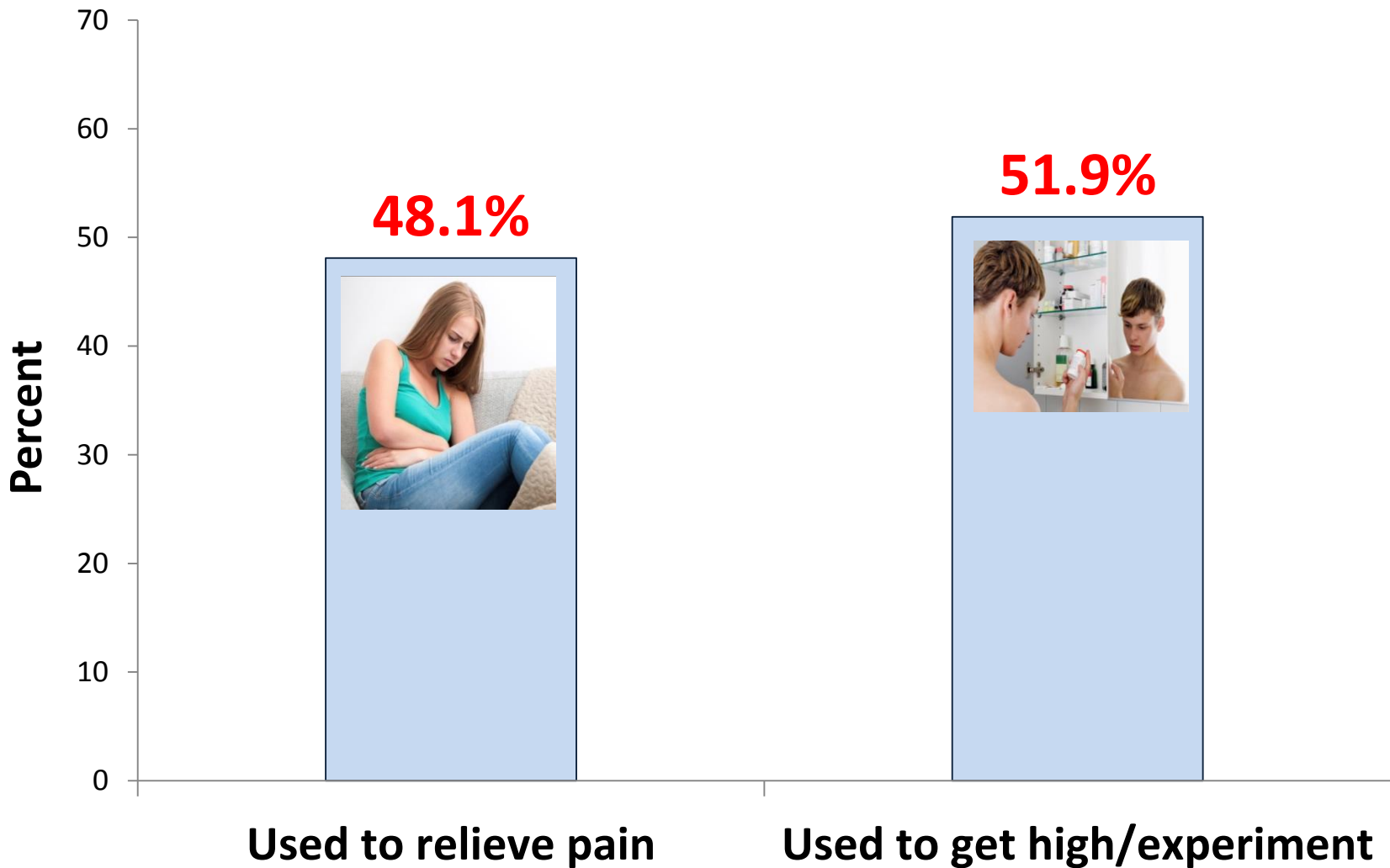


**Cigarette smoking**

**AOR: 2.2**

(95% CI 1.3-3.5)

# Motivations for opioid misuse





## Recreational use

**AOR: 3.42**

(95% CI 1.45-8.07)



## Unprescribed pain relief

**AOR: 1.8**

(95% CI 1.20-2.60)



## Prescribed pain relief

**AOR: 1.33**

(95% CI 1.04-1.70)



**Major depression, anxiety disorder, or panic disorder**

**AOR: 4.43**

(95% CI 3.64-5.38)



**Familial alcohol problem/drug use**

Hard drug abuse/dependence

**AOR: 7.92**



**PTSD**

Hard drug abuse/dependence

**AOR: 8.68**

# Pediatricians **must** be part of the solution to the opioid crisis

American Academy  
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

## Medication-Assisted Treatment of Adolescents With Opioid Use Disorders

COMMITTEE ON SUBSTANCE USE AND PREVENTION





**750,000 can prescribe addictive  
pain meds**



**37,000 trained to prescribe  
addiction treatment.**

**Only half actually do.**



**1% are pediatricians.**

TREATMENT



# The Boston Globe

## Pediatricians are treating opioid addicts, and it's working



DEBEE TLUMACKI FOR THE BOSTON GLOBE

From left to right, Dr. Steven Mendes, substance abuse counselor Shannon Mountain-Ray, and Dr. Jason Reynolds have welcomed young patients with substance use problems to Wareham Pediatrics.



# Buprenorphine Waiver Training

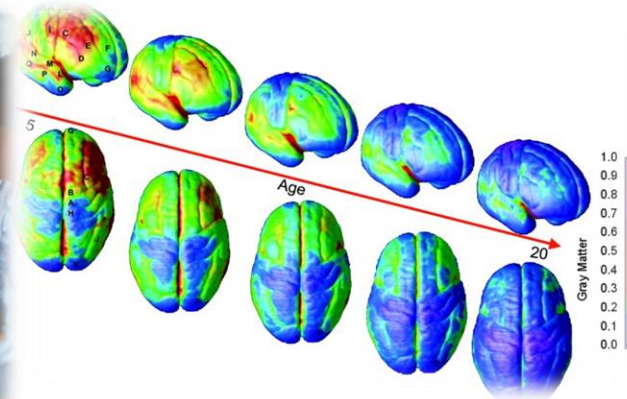


Providers  
Clinical Support  
System



Confidentiality

Model of care

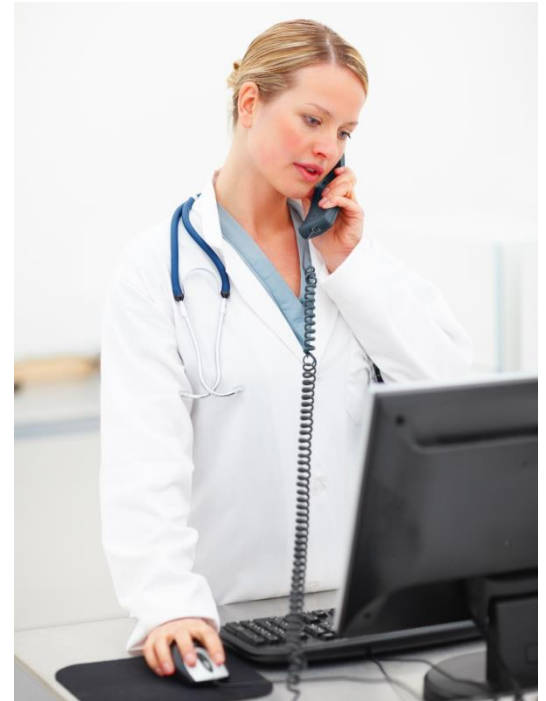


Neurobiology and the  
developing brain



# PPOC

Pediatric Physicians' Organization at Children's





**Boston  
Children's  
Hospital**

Until every child is well™

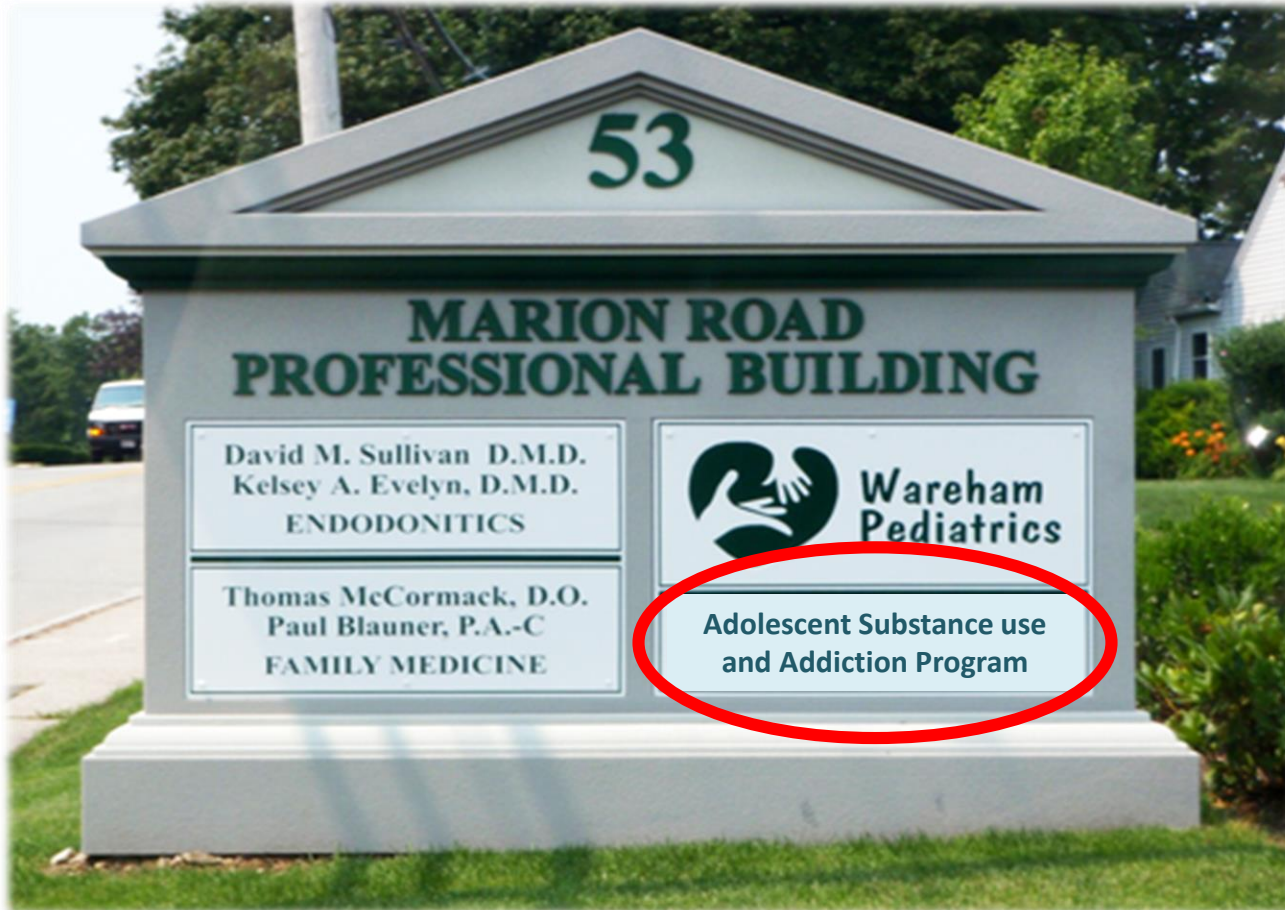
# PPOC

Pediatric Physicians' Organization at Children's



**BlueCross  
BlueShield**







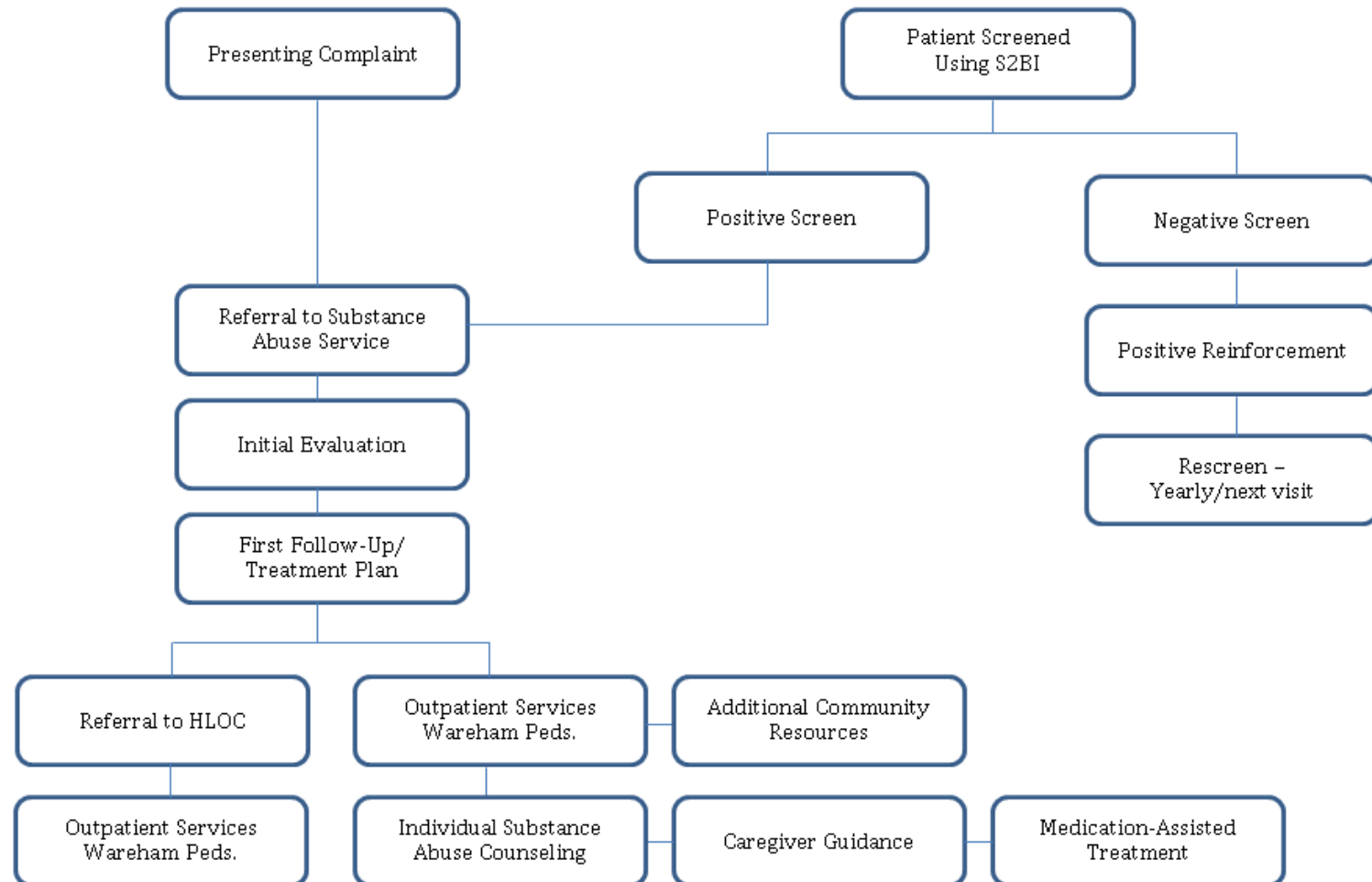
# Integration Challenges

CFR 42, Part II



# Integration Challenges

## New clinical workflow



# Integration Challenges

## Emergencies



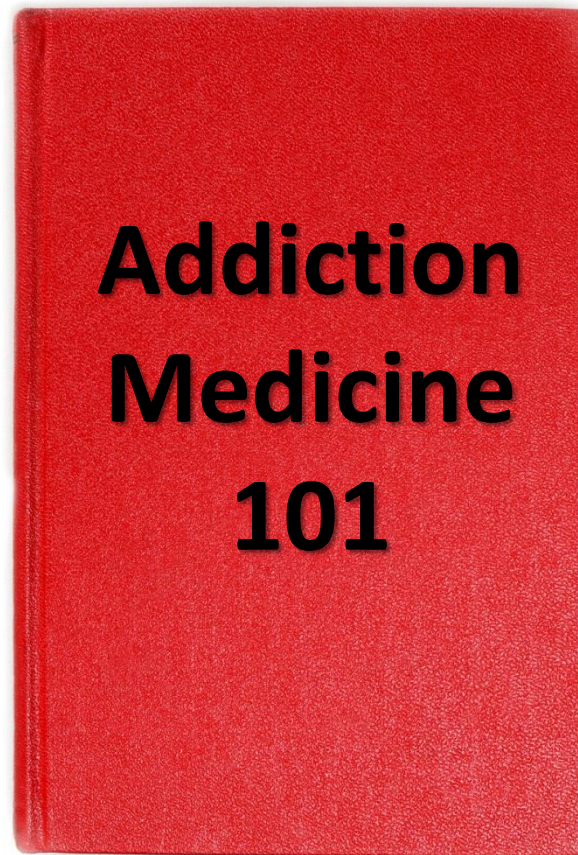
# Integration Challenges

## Emergencies



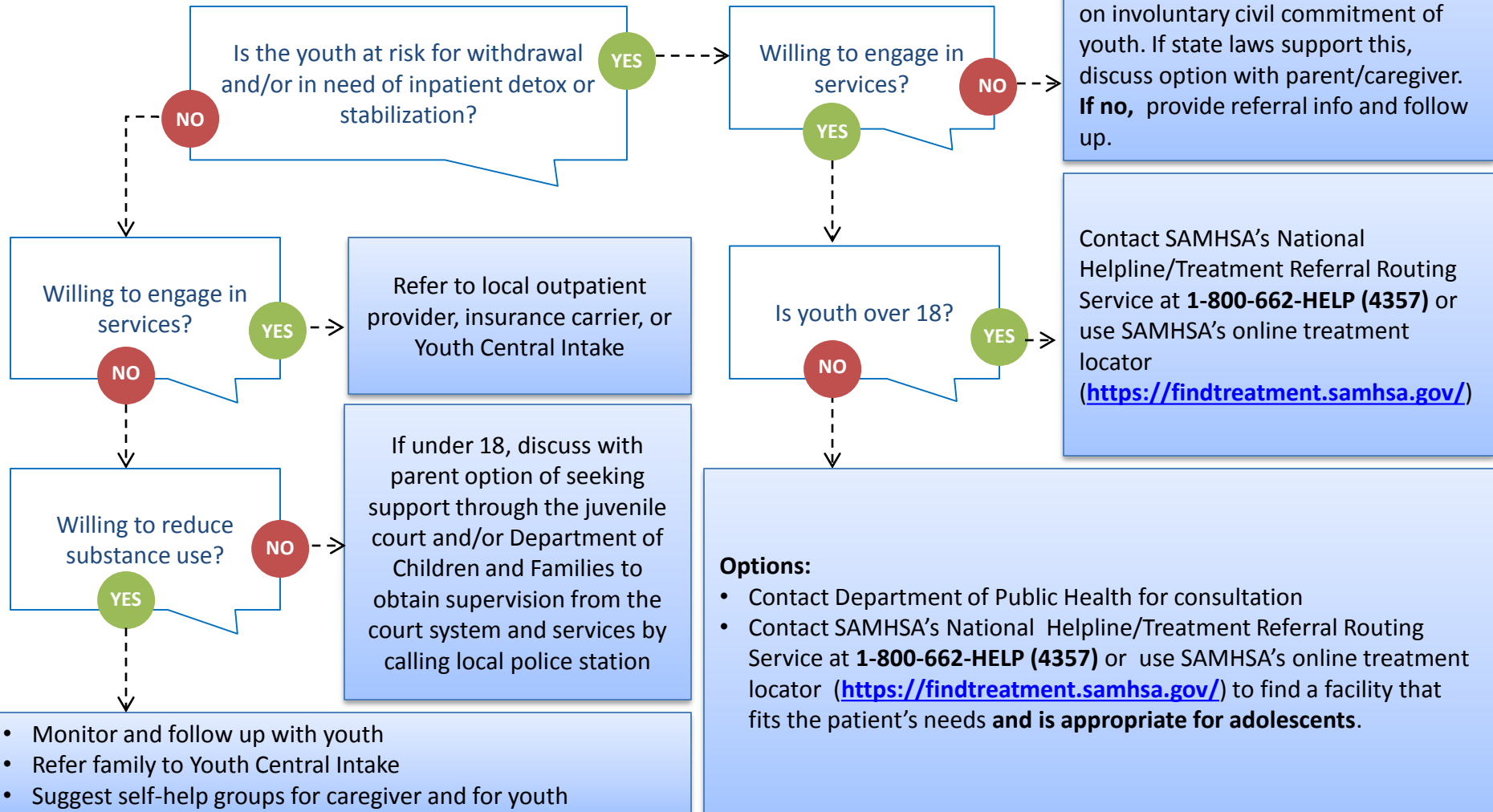
# Integration Challenges

Additional Training



# Integration Challenges

## Connections to higher levels of care



Is youth at risk for harm to self through ongoing substance use that interferes with capacity to provide self-care? **If yes**, refer to state policies on involuntary civil commitment of youth. If state laws support this, discuss option with parent/caregiver. **If no**, provide referral info and follow up.

Contact SAMHSA's National Helpline/Treatment Referral Routing Service at **1-800-662-HELP (4357)** or use SAMHSA's online treatment locator (<https://findtreatment.samhsa.gov/>)

**Options:**

- Contact Department of Public Health for consultation
- Contact SAMHSA's National Helpline/Treatment Referral Routing Service at **1-800-662-HELP (4357)** or use SAMHSA's online treatment locator (<https://findtreatment.samhsa.gov/>) to find a facility that fits the patient's needs **and is appropriate for adolescents.**

# Will kids really come?



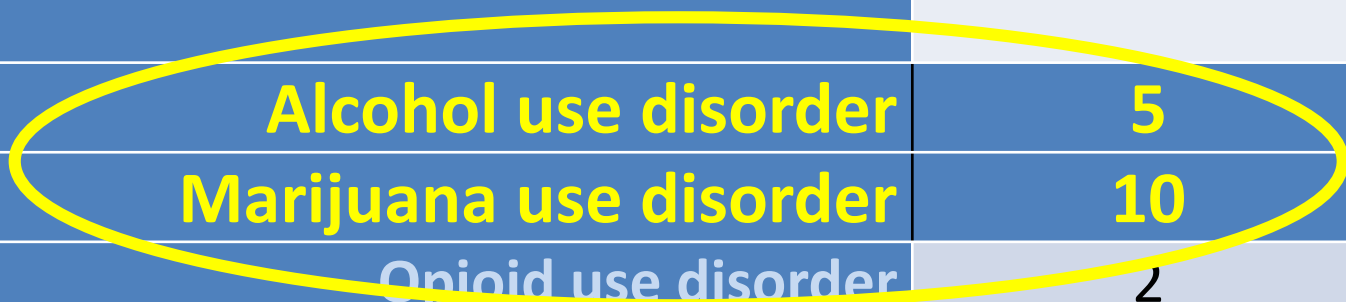
# Results: First 4 months

- Patients ages 12-22 seen for primary care: 683
- Expected number with SUD: 50
- Actual number identified: 20
- Number that kept at least one appointment: 13



	N
<b>Total Referred</b>	20
<b>Total Evaluated</b>	13
<b>Age, mean (range)</b>	17.3 (12-21)
<b>Parental Involvement</b>	7
<b>Length of Treatment, mean (range) weeks</b>	7 (1-19)
<b>SUD Diagnoses</b>	
<b>Alcohol use disorder</b>	5
<b>Marijuana use disorder</b>	10
<b>Opioid use disorder</b>	2
<b>Cocaine use disorder</b>	2
<b>Sedative use disorder</b>	1
<b>Hallucinogen use disorder</b>	2
<b>MH diagnoses</b>	
<b>Anxiety disorder</b>	9
<b>Mood disorder</b>	3
<b>Non-verbal learning disorder</b>	1
<b>Attention deficit/hyperactivity disorder</b>	4
<b>Post-traumatic stress disorder</b>	3

<b>Total Referred/Evaluated</b>	<b>20</b>
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Notice of Award

Issue Date: 11/14/2018



SBIRT-18

Department of Health and Human Services

Substance Abuse and Mental Health Services Administration

Center for Substance Abuse Treatment

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Grant Number: 1H79TI081137-01

FAIN: H79TI081137

Program Director: SHARON J LEVY MD

Project Title: Integrating SBIRT into Pediatric Primary Care

Organization Name: BOSTON CHILDREN'S HOSPITAL





**Northampton**

**Shrewsbury**

**Framingham**

**CHA -Auburn**

**Brockton**

**CHA -Bridgewater**

**Wareham Pediatrics**

**Sandwich**

# The Boston Globe

## Pediatricians are treating opioid addicts, and it's working

By Felice J. Freyer | GLOBE STAFF JUNE 12, 2017

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Dr. Jason Reynolds still thinks about the girl he could not save.

The teenager was homeless and shooting heroin. Once, she ended up in a hospital with a severe skin infection, a common consequence of injecting drugs. She received treatment for the infection, but not for her obvious addiction, and was referred to Reynolds, her Wareham pediatrician.

He could not find a treatment program for her. And the last he heard, the girl was roaming the shelters in Boston.



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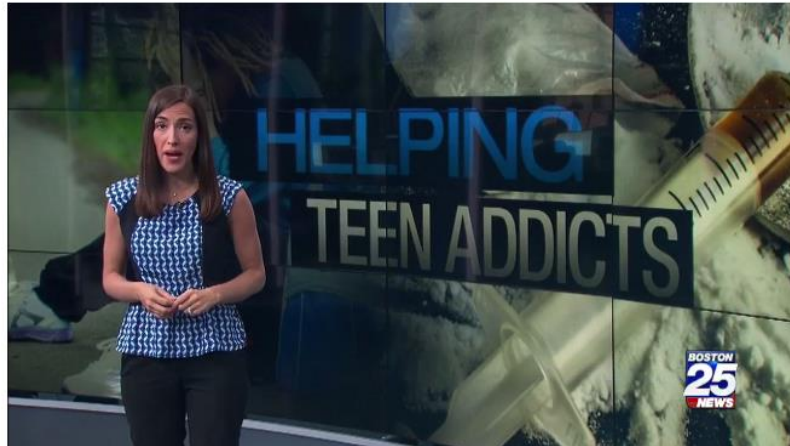
[DELIVERING CARE](#)

## Pediatric primary care could be key to solving teen opioid crisis

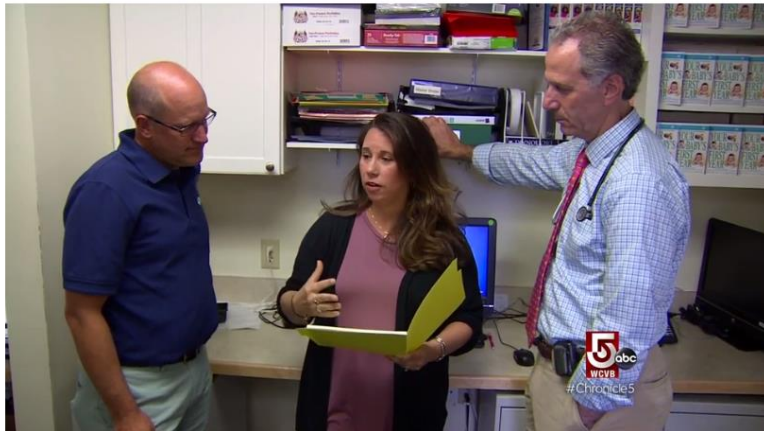
AUG 24, 2017

# On TV

## Boston 25



## Chronicle



## Today Show



# Senator Warren





# Acknowledgements

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Shannon Mountain-Ray, MSW

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Patricia Schram, MD

## **Research Assistants**

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Molly Doernberg

Dylan Kaye

Maha Mian

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Jennifer Putney, PhD

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