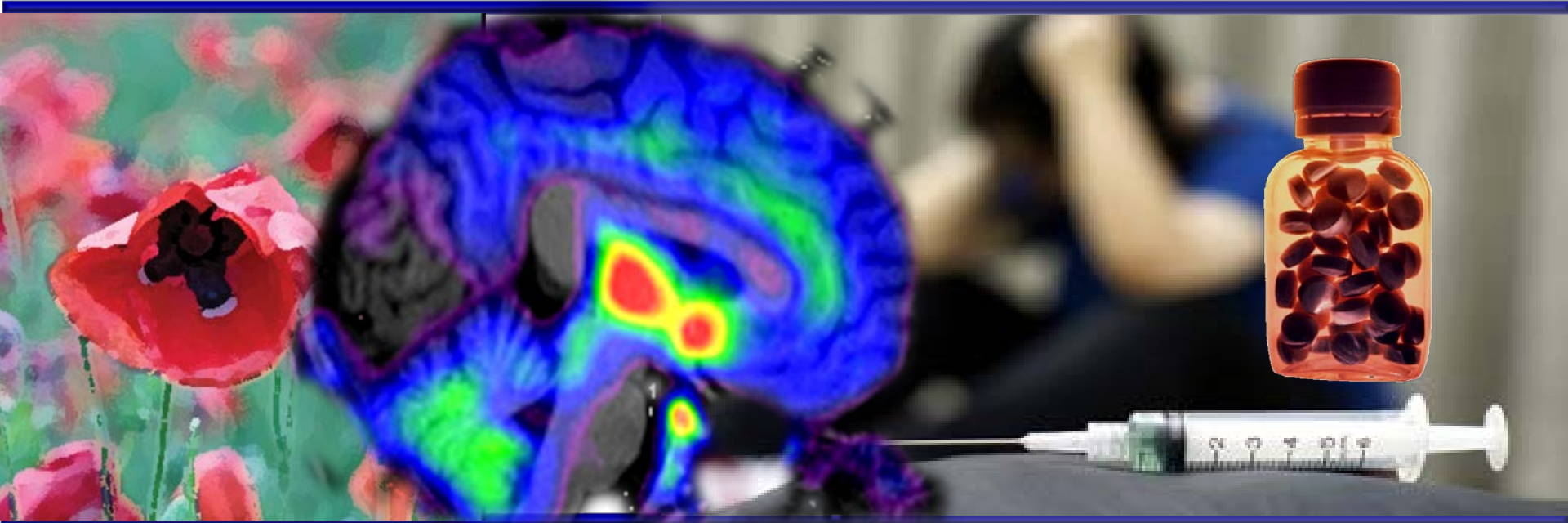


# Advances in Prevention



**Carlos Blanco, M.D., Ph.D.**

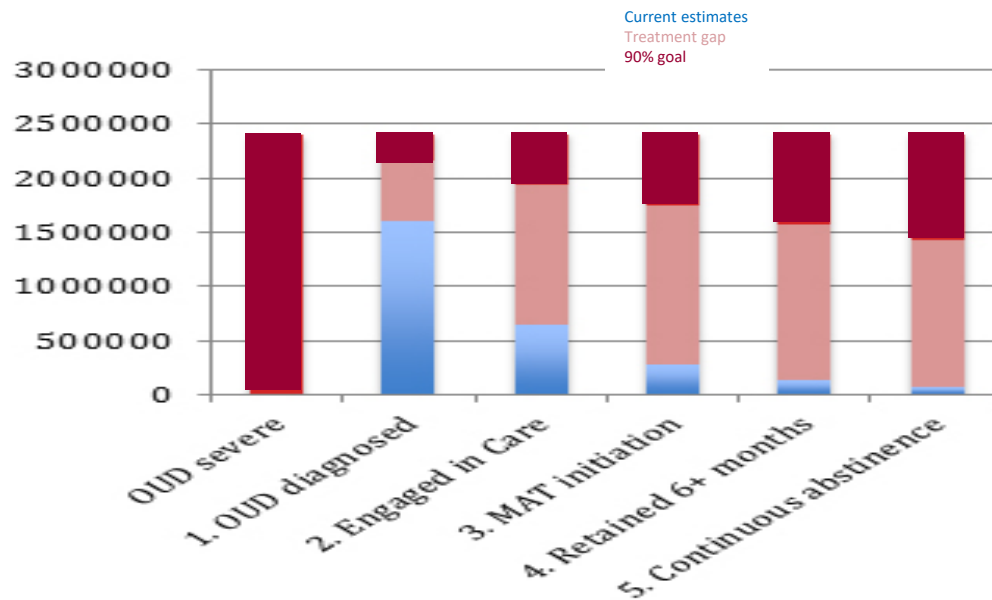
Director, Division of Epidemiology, Services and  
Prevention Research

National Institute on Drug Abuse



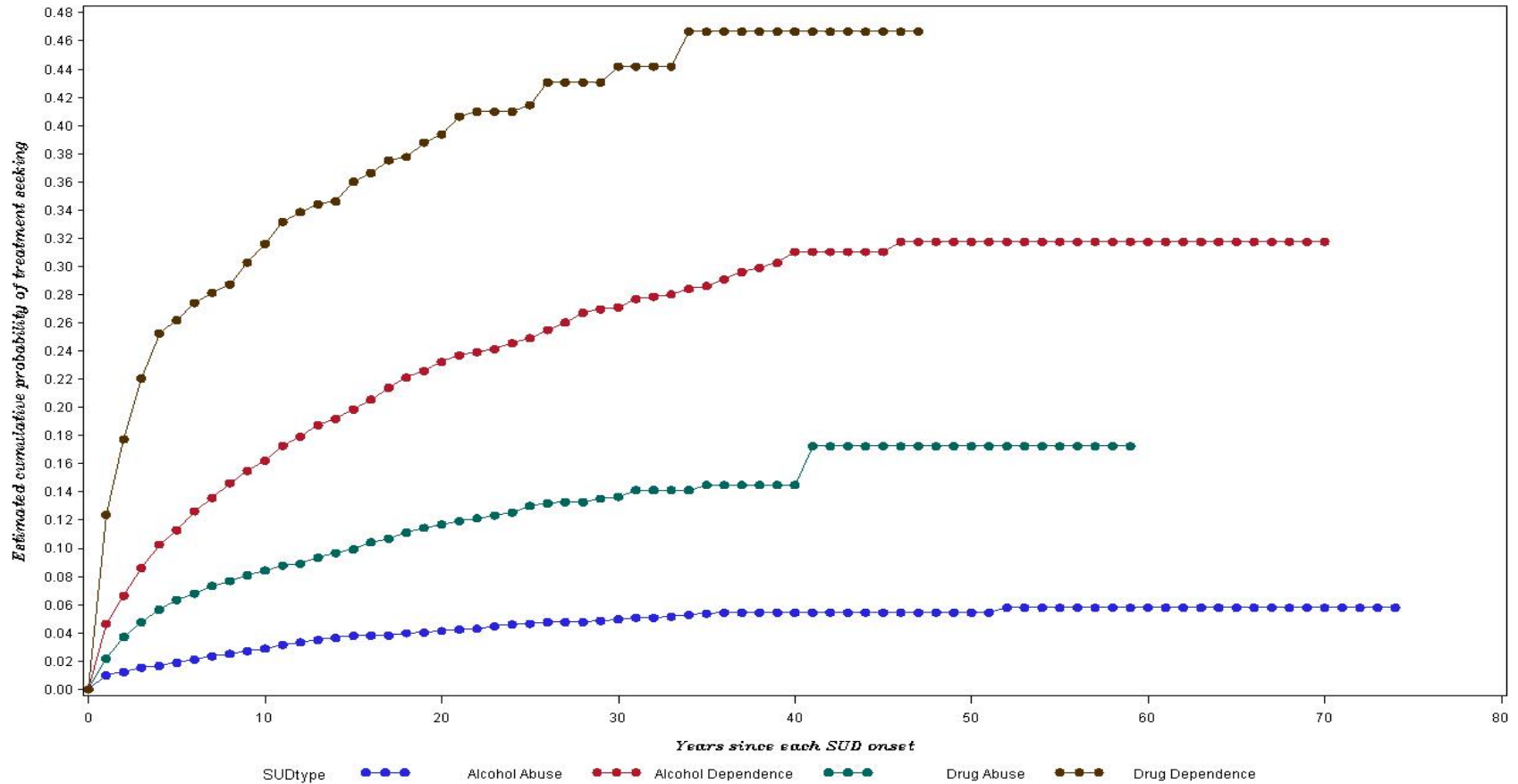
# Treatment is not nearly enough

## OUD Cascade of Care in USA



Williams AR, Nunes E, Olfson M. Health Affairs Blog, 2017

# Cumulative Probability of treatment for SUD



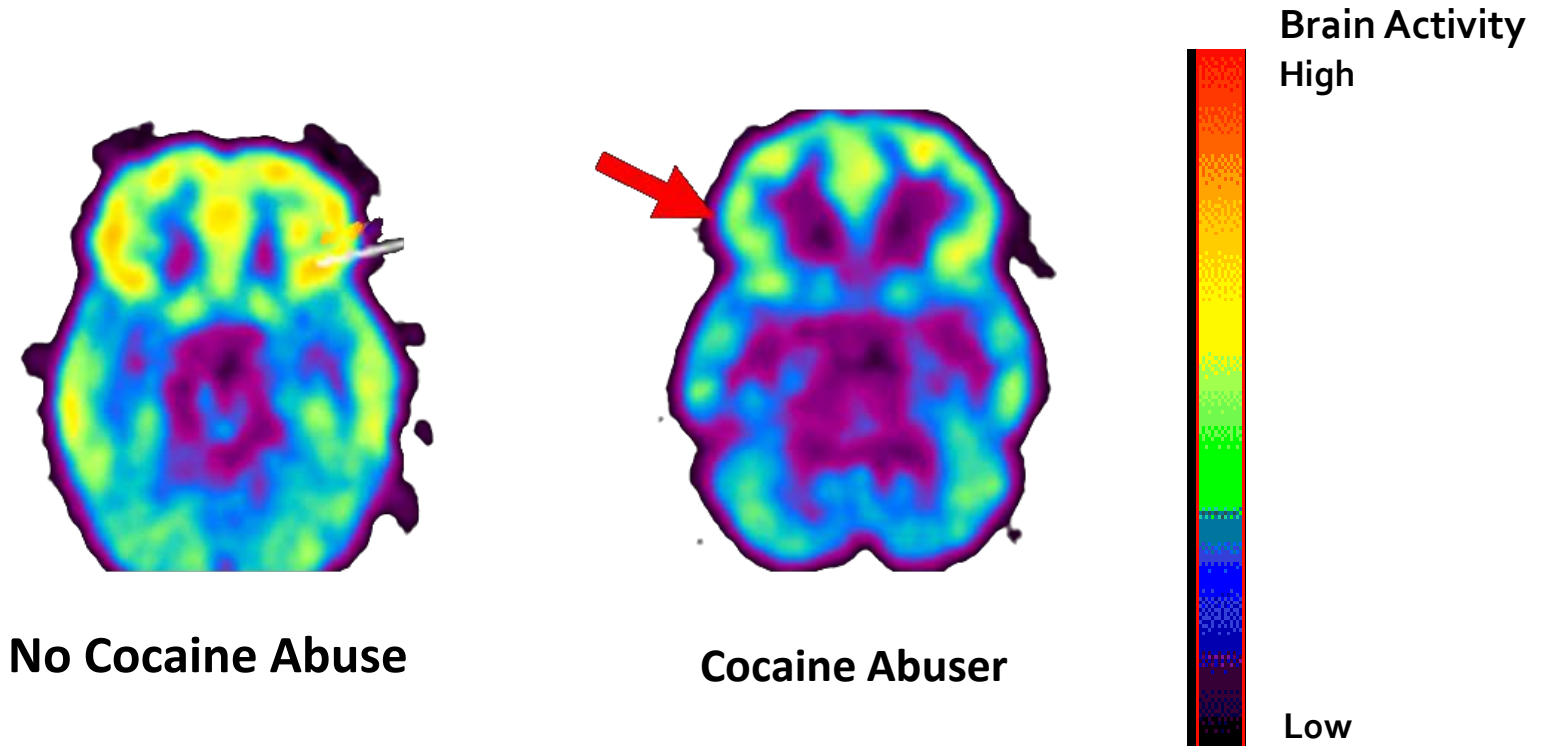
# **PREVENTION is based on an Understanding of Epidemiology**

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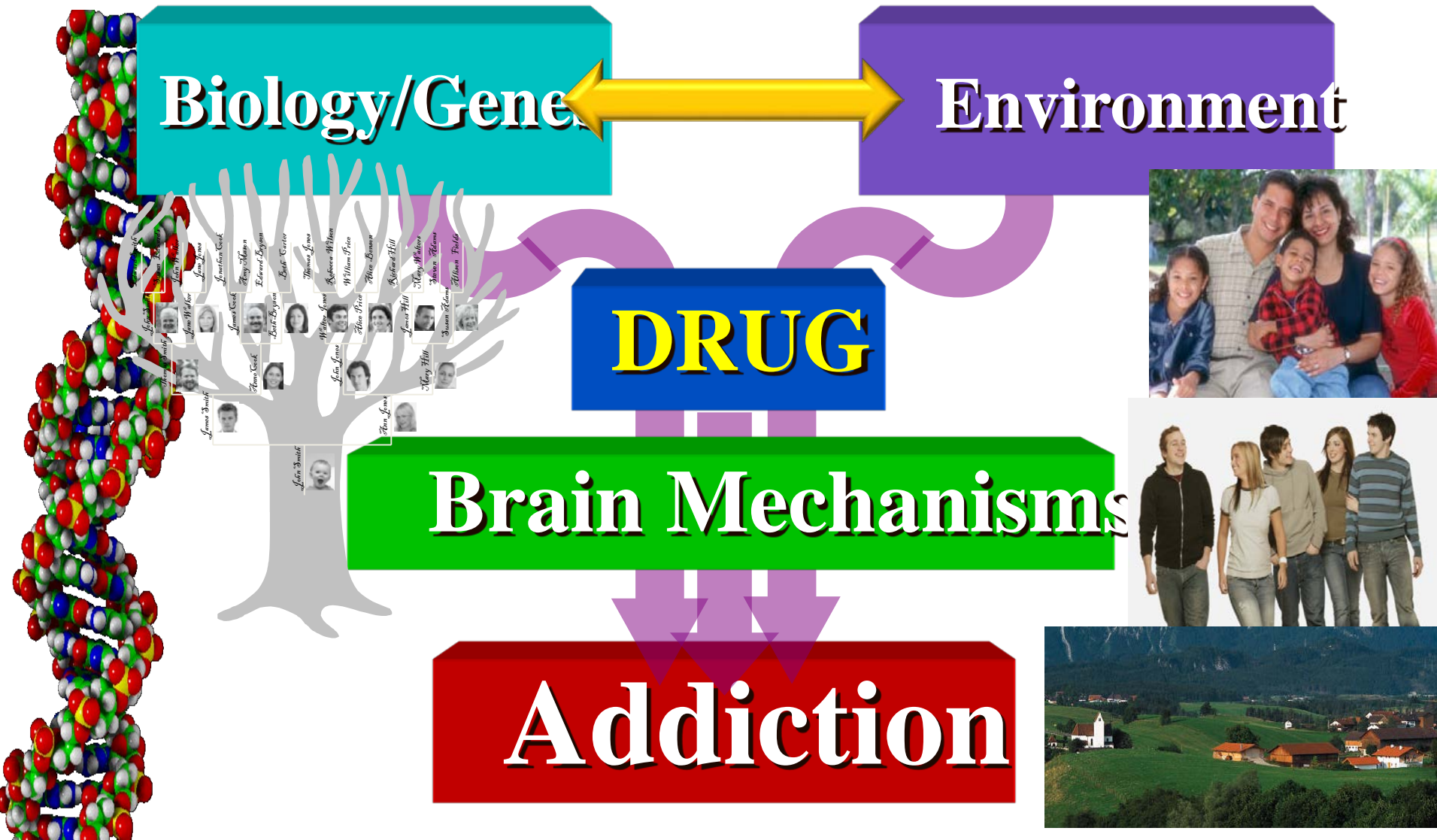
- **Risk and Protective Factors...**
  - **predict substance use;**
  - **are nested within the individual and the contexts surrounding the individual;**
  - **provide potential sites for intervention.**

# Addiction Is A Disease Of The Brain

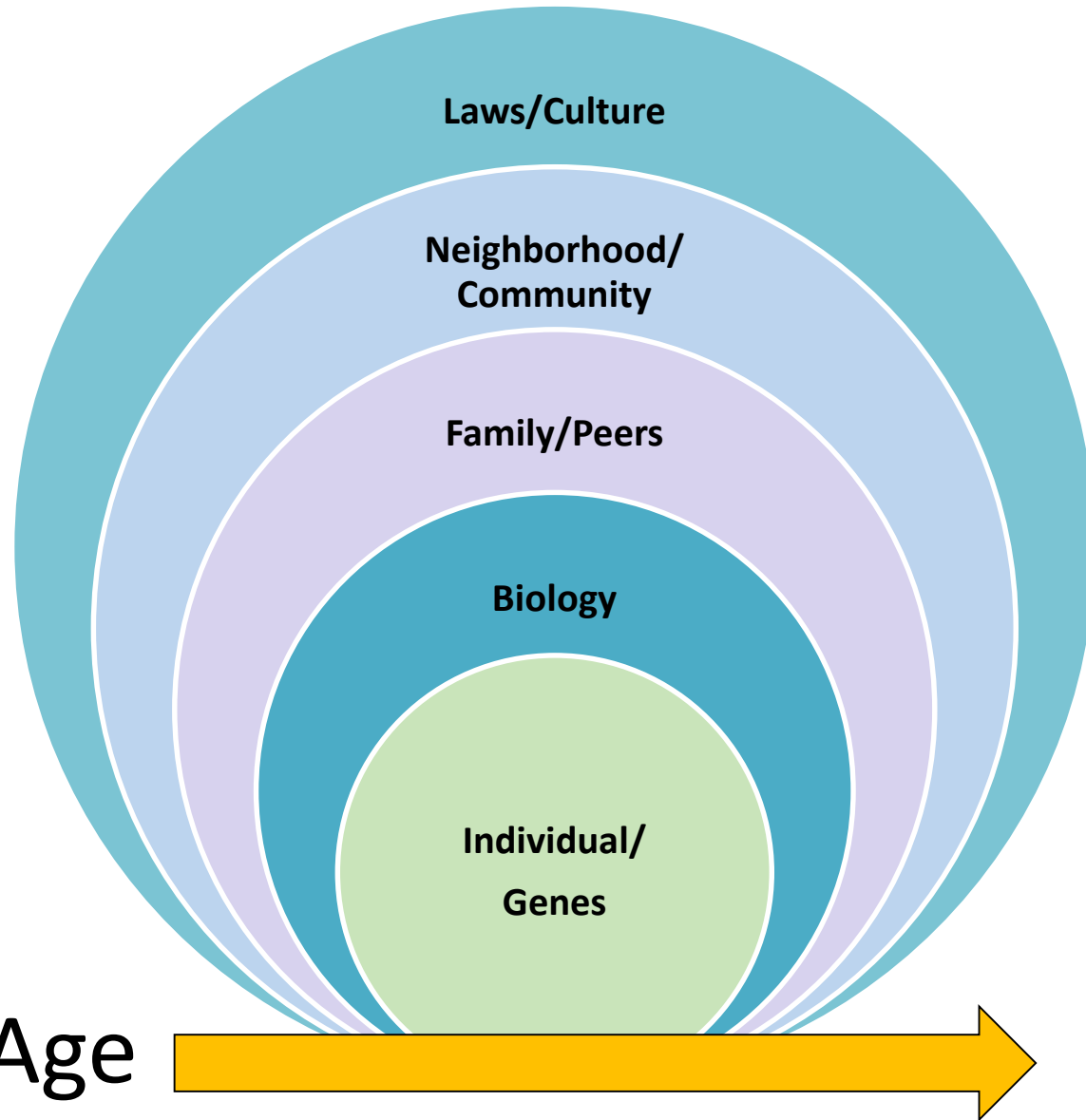
Decreased Brain Metabolism in Drug Abuse Patient



# ADDICTION INVOLVES MULTIPLE FACTORS

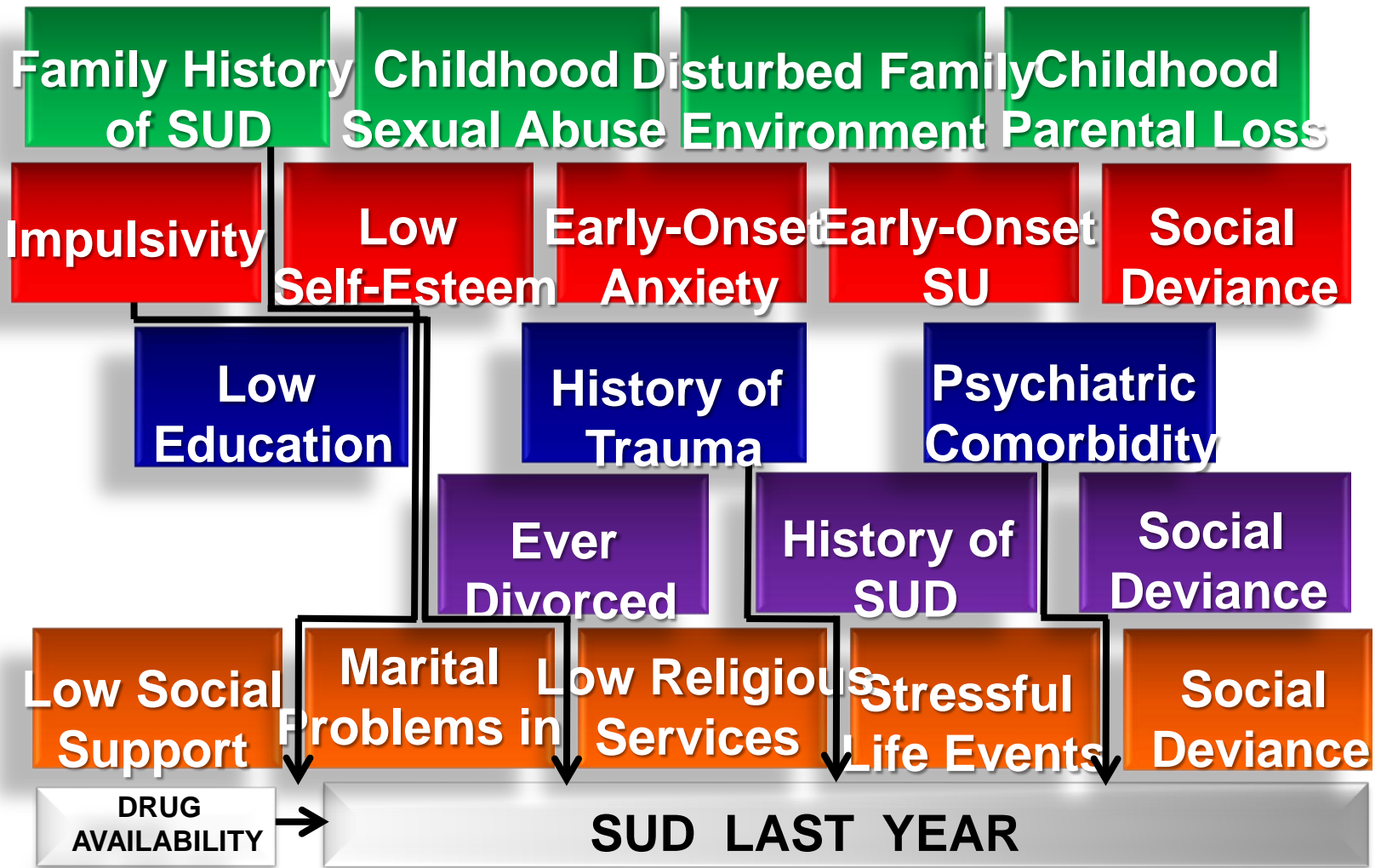


# There are Multiple Risk Factors



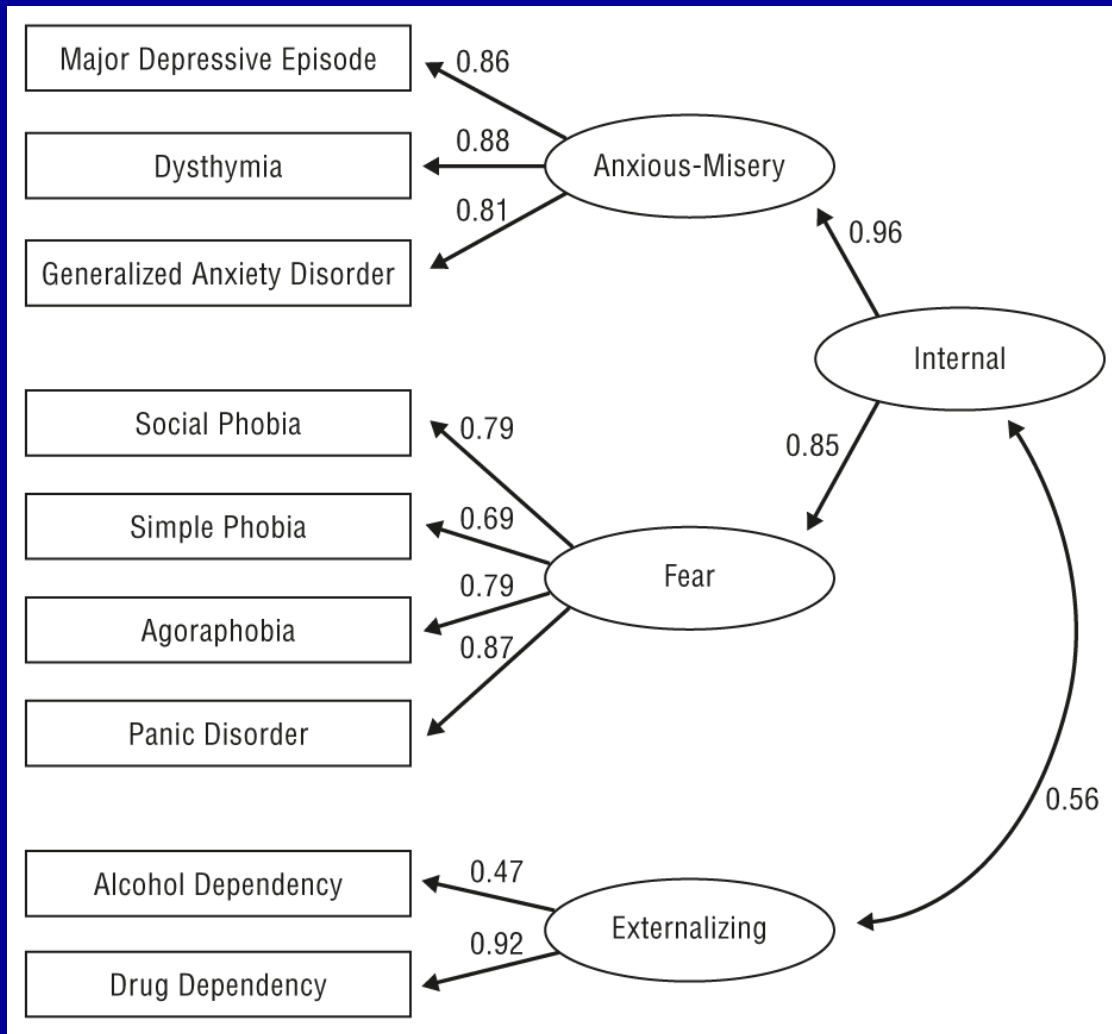


# RISK FACTORS FOR SUBSTANCE USE DISORDER





# SUDs are part of a broader structure



# Probability And Age of First Substance Use

## Probability of Use

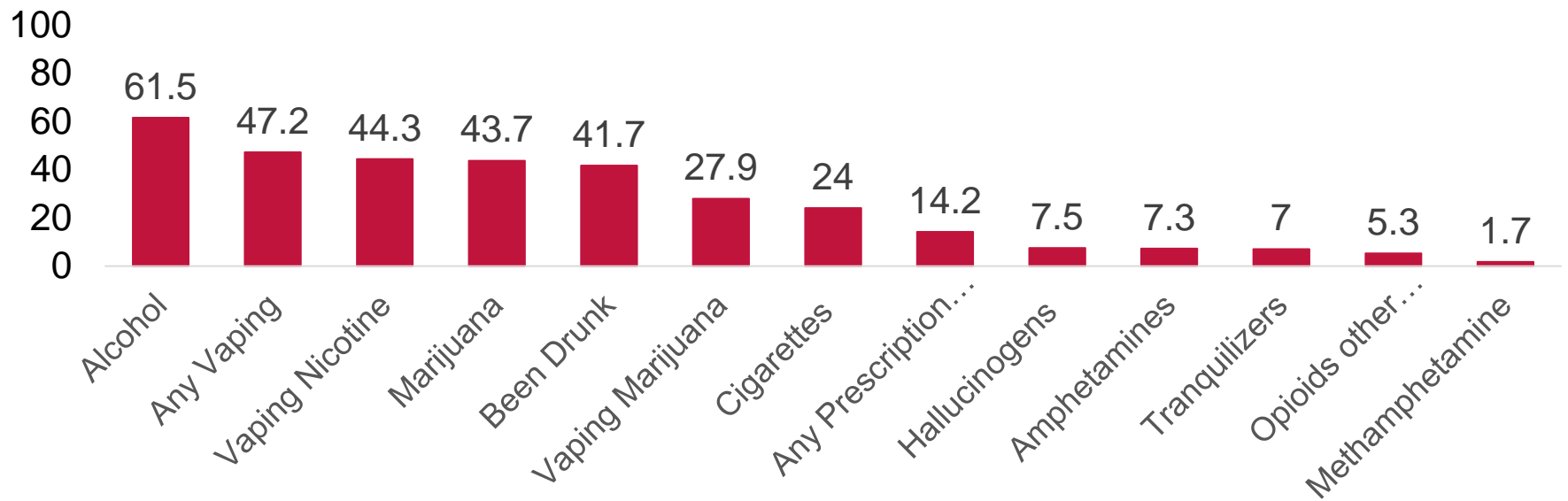
<b>Nicotine</b>	<b>46%</b>
<b>Alcohol</b>	<b>82%</b>
<b>Cannabis</b>	<b>20%</b>
<b>Cocaine</b>	<b>6%</b>

## Median Age at First Use (in years)

<b>Nicotine</b>	<b>15</b>
<b>Alcohol</b>	<b>18</b>
<b>Cannabis</b>	<b>17</b>
<b>Cocaine</b>	<b>20</b>

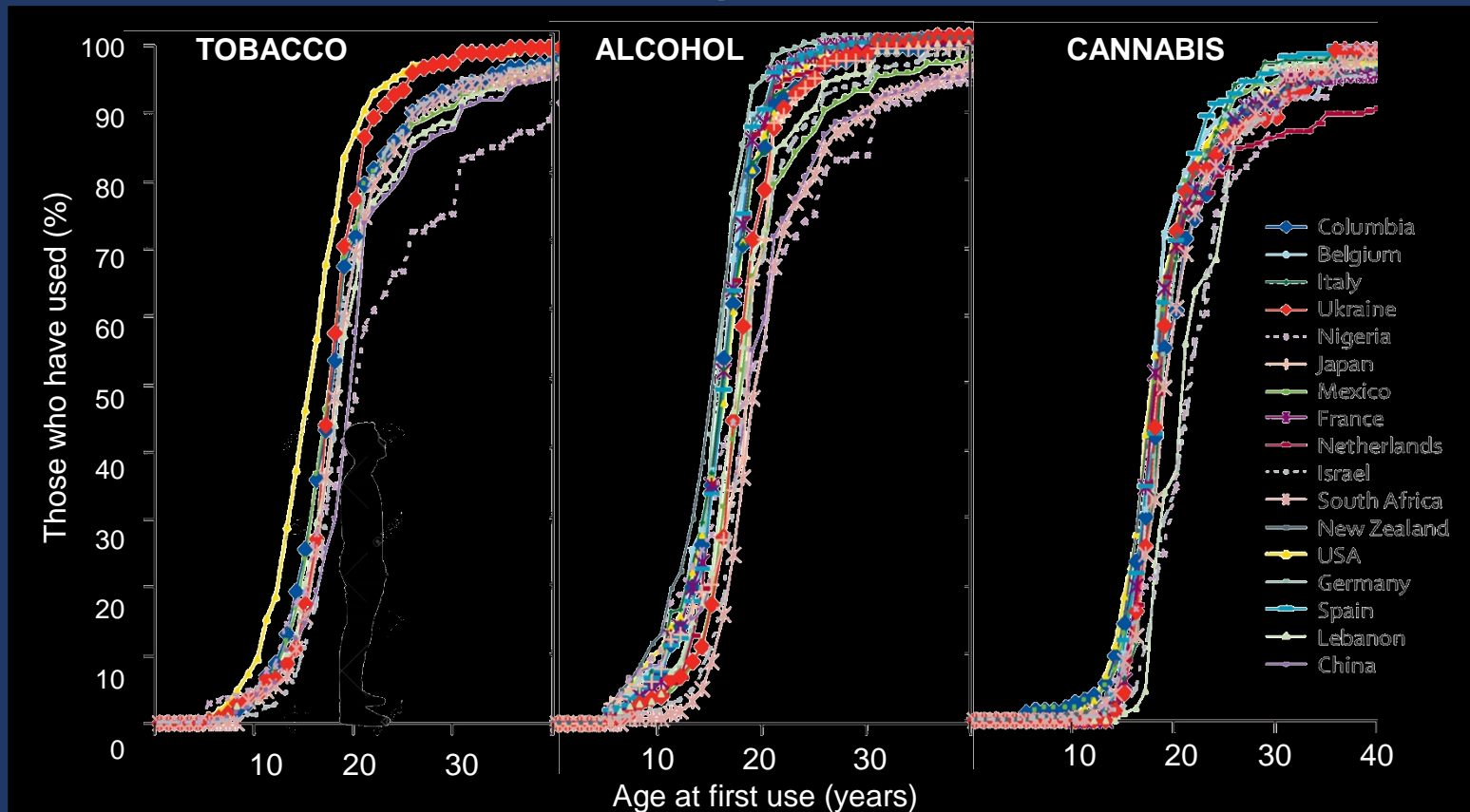
# By the Time they are in 12<sup>th</sup> Grade, More than Half of Teens Report Having Tried Alcohol, Nearly Half Have Tried Vaping

## Percentage of Seniors Who Have Ever Used



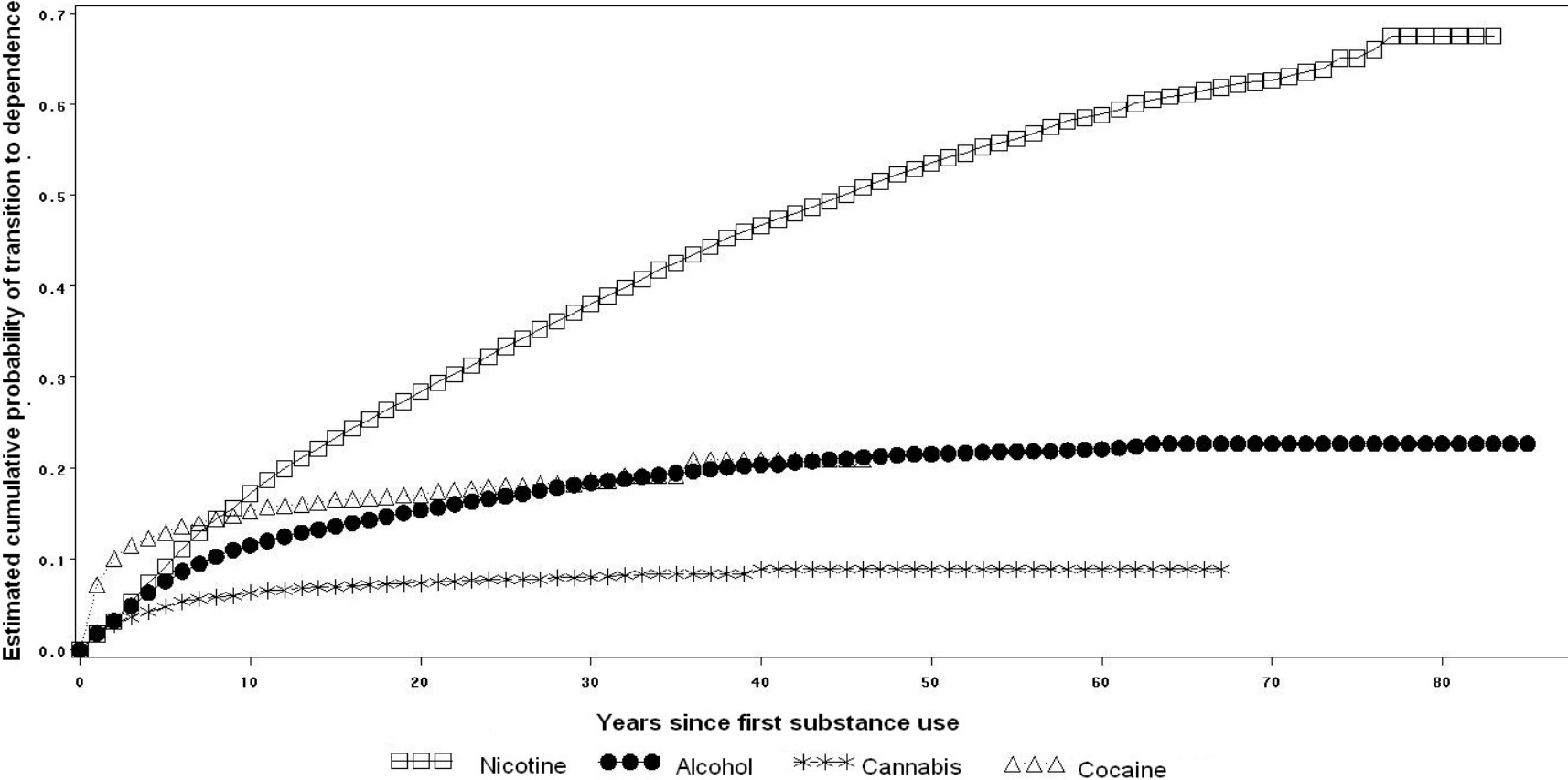
Source: University of Michigan, 2020 Monitoring the Future Study

# Adolescence is the *period of greater Vulnerability* for Drug Abuse & Addiction

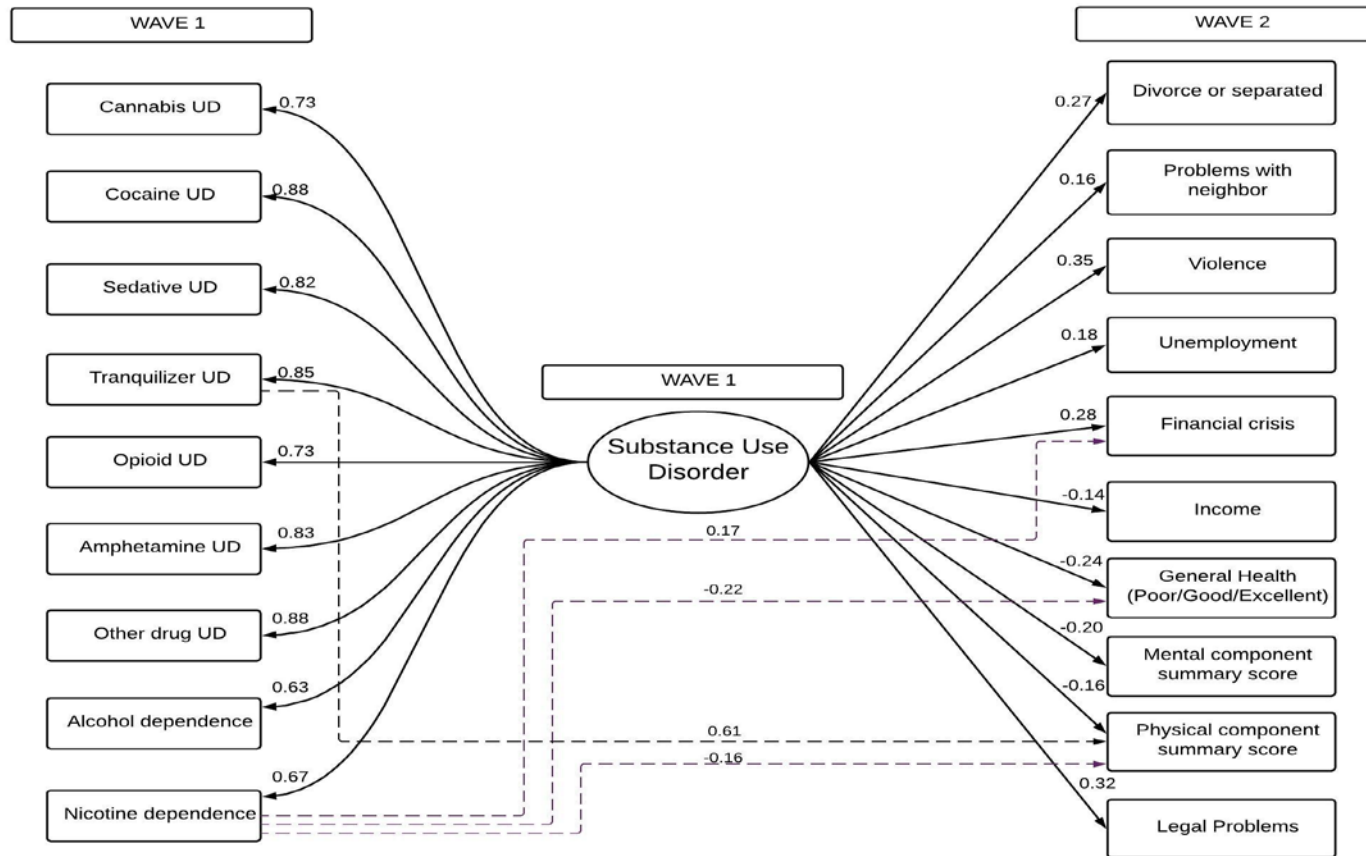


Degenhardt, JAMA Psychiatry 2016.

# Probability of transition



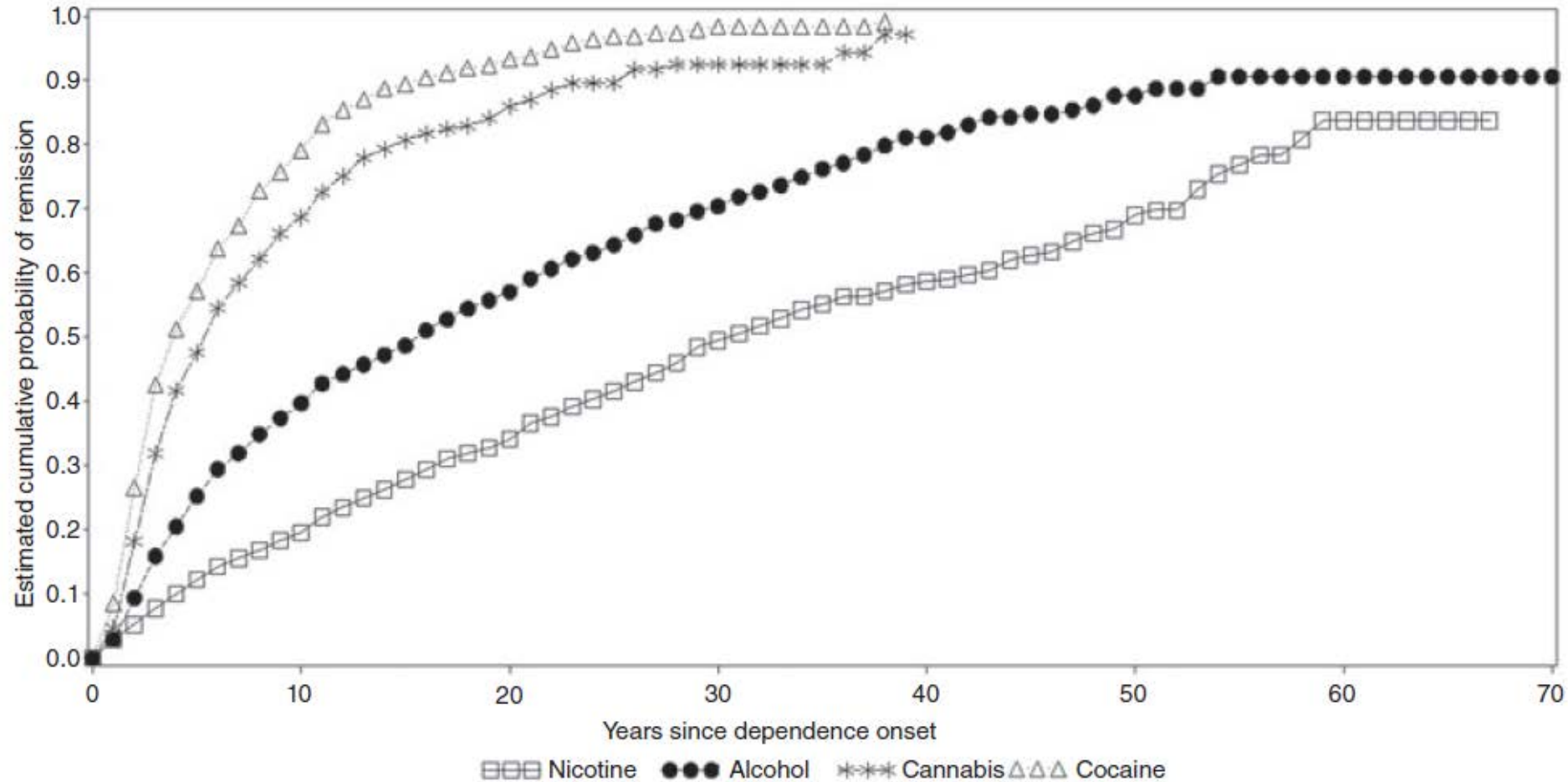
# Common and Specific Consequences of SUD



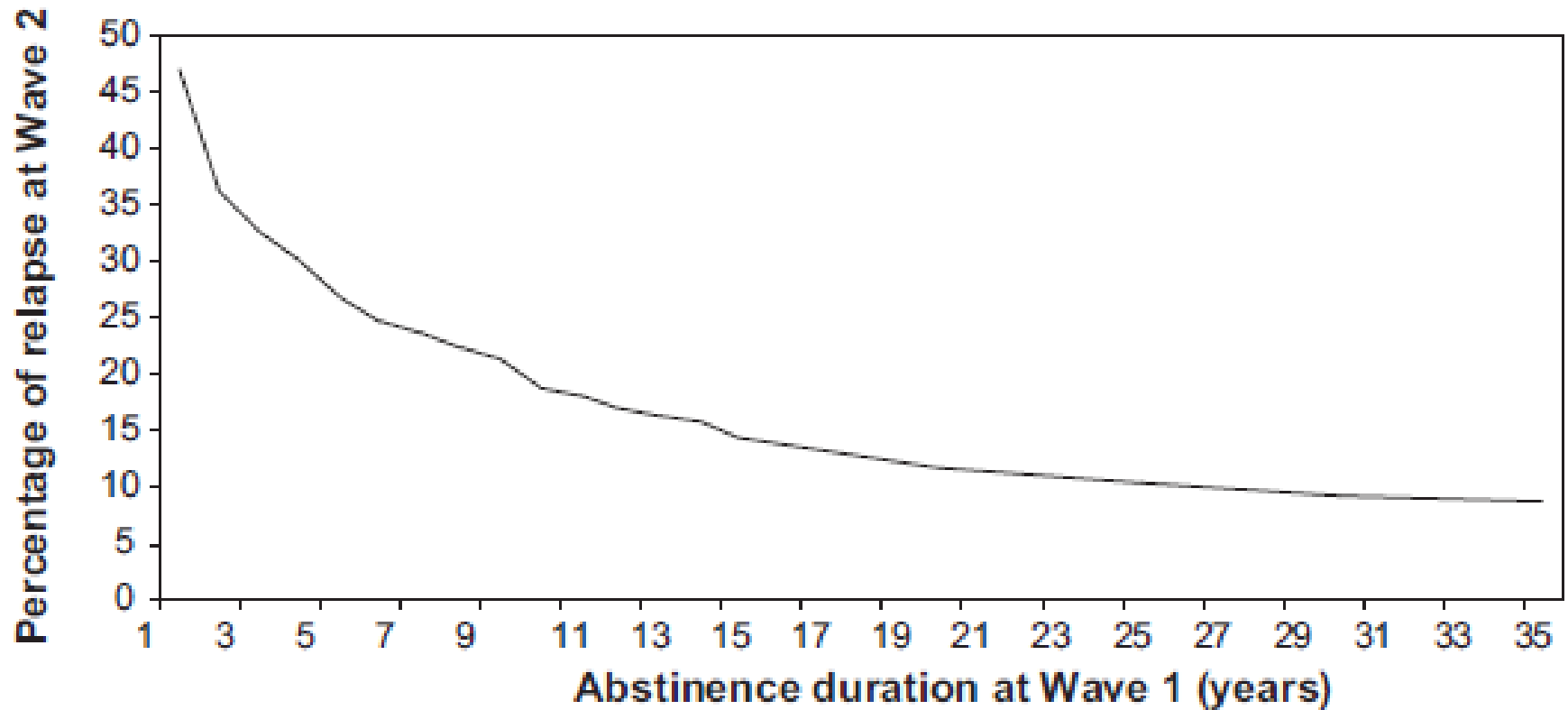
**We Also Need to  
View and Treat Addiction  
As A Chronic, Relapsing Illness**



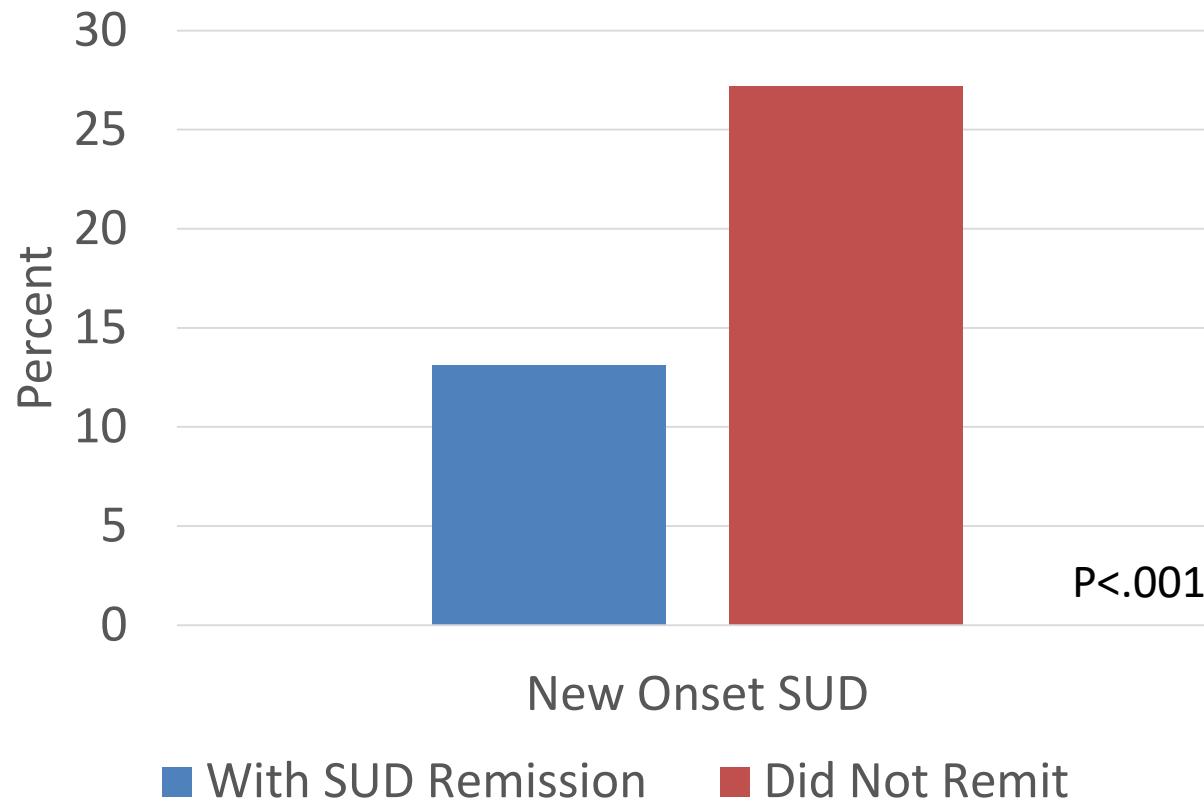
# Natural course of remission for four substances



# Course of relapse of smoking



# Switching Addictions?

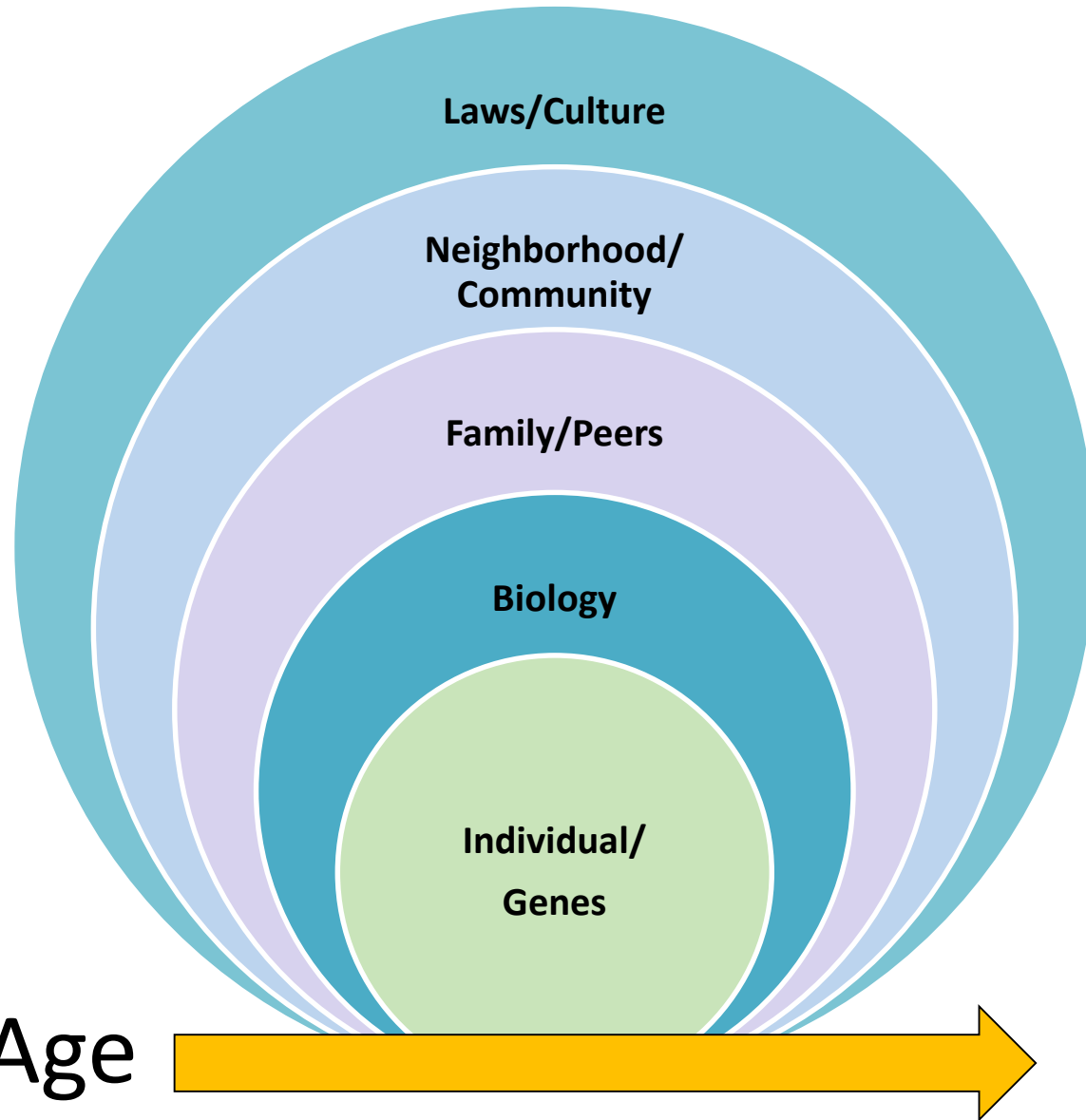


# So...what Have We Done To Change The Drug Abuse Trajectory?

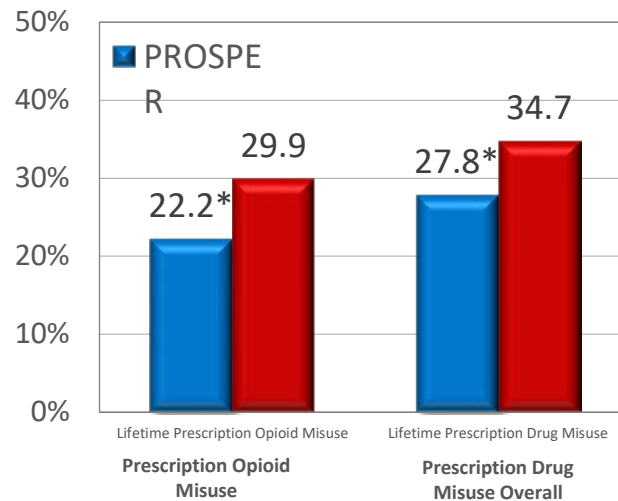
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Drug abuse Prevention can be  
seen as *experimental  
epidemiology*.

# There are Multiple Risk Factors



# Example from PROSPER Community Prevention Delivery System—Young Adult Outcomes of Middle School Programs



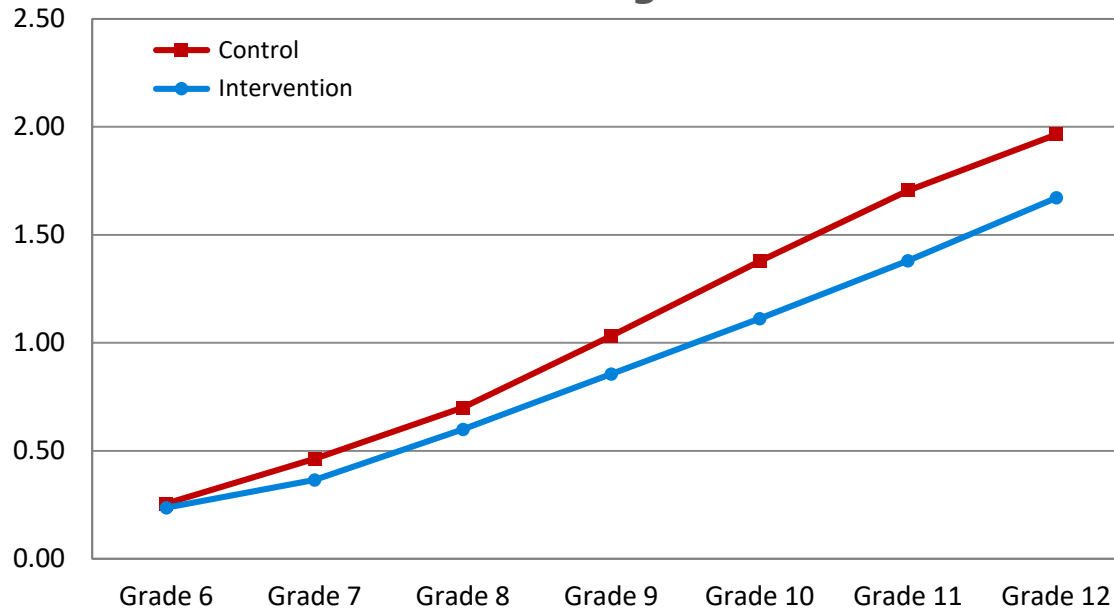
Note: \* $p < .05$ , RRRs=20-26%

Source: R Spoth et al. *American Journal of Public Health* 2013.

**PROSPER vs. control differences are practically significant: For every 100 misusers in non-PROSPER communities, there would be about 20-26 fewer in PROSPER communities.**

# PROSPER (Community/University Partnership) Reduces Illicit Substance Use

Reduced Increase in Use Through 6½ Years Past Baseline

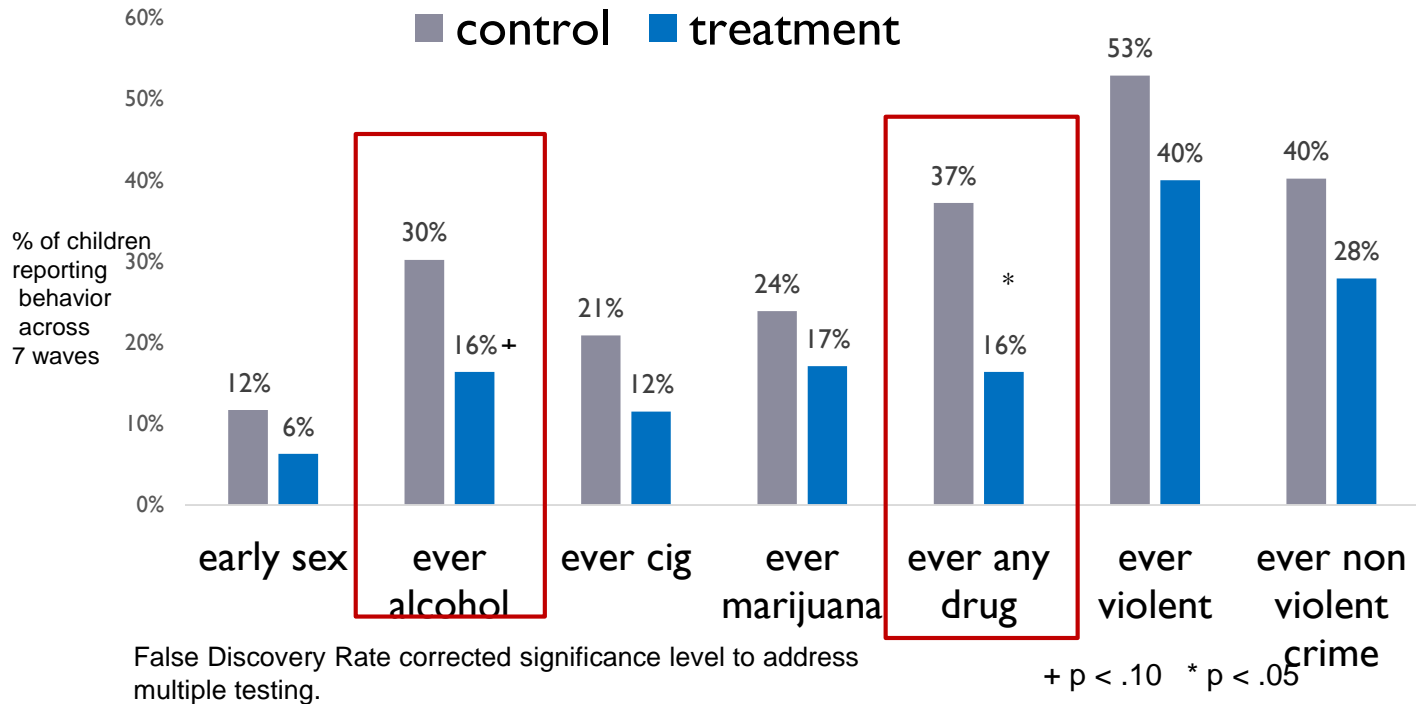


Sum of six lifetime illicit use measures (methamphetamines, Ecstasy, inhalants, Vicodin, prescription drug misuse overall, other illicit drug use); Intervention vs. Control difference in slope is statistically significant, as are differences at multiple time points, including 11<sup>th</sup> and 12<sup>th</sup> grades.

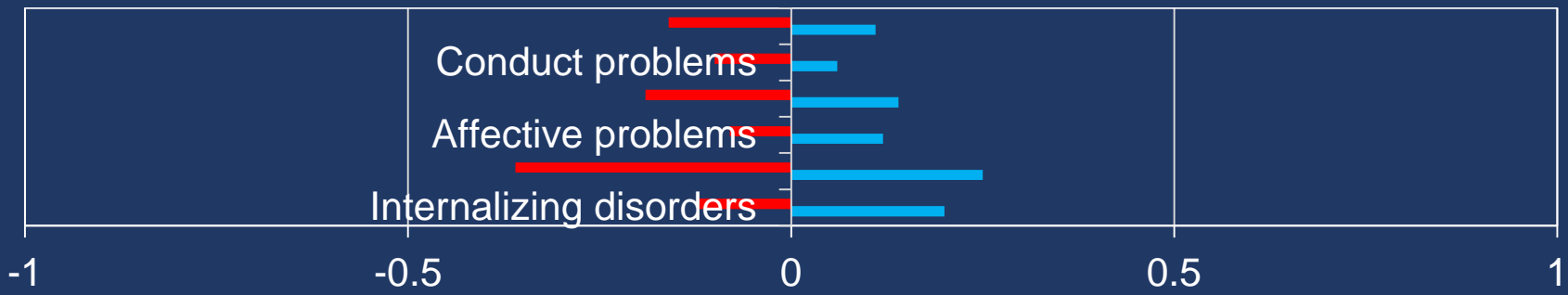
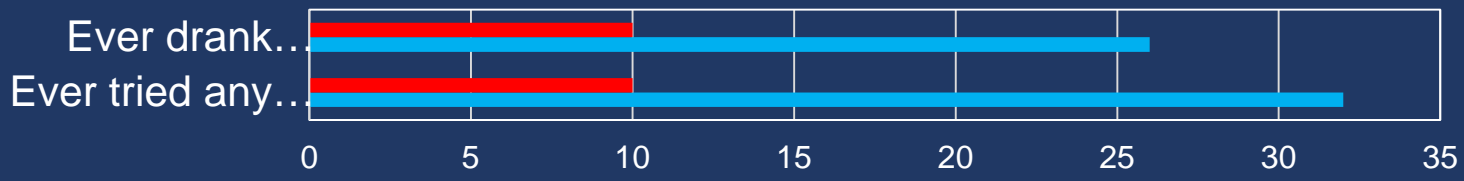
Source: Spoth, Redmond, Shin, Greenberg, Feinberg, et al. (2013). PROSPER community-university partnerships delivery system outcomes through 6½ years past baseline.



Parents who were in the SSDP intervention in childhood grow up to have children with **lower youth self-reported alcohol and drug onset** (ages 6 -18 years)

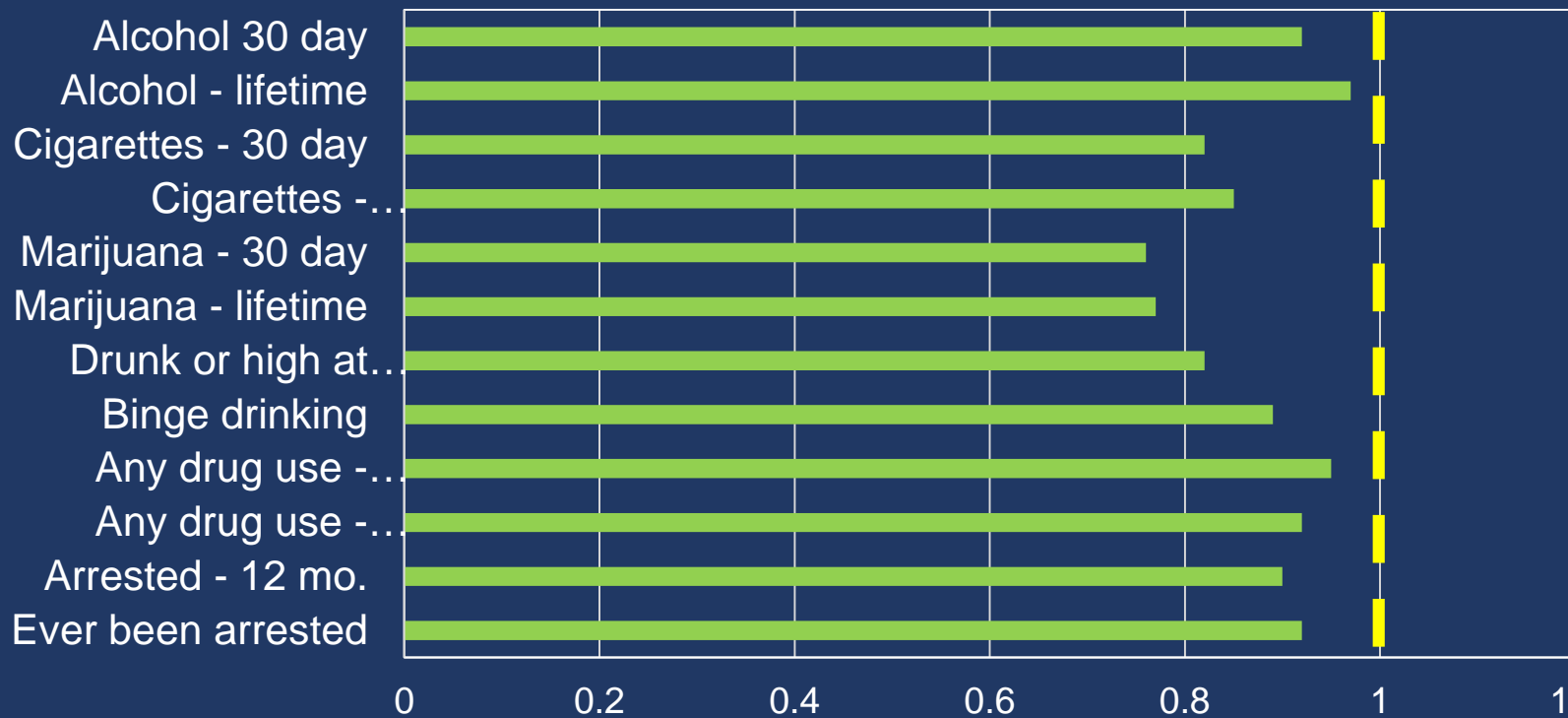


**Children (1-18 years old) from Parents who were in *Raising Healthy Children Intervention* in Grades 1-6 (n=72) Compared to Controls (n=110)**



# Public Health Benefits 16 Years After State Policy Change: Communities That Care in Pennsylvania

School districts (388) that implemented CTC (52%) had significantly lower levels of adolescent substance use, delinquency, and depression (odds ratios).



Chilenski SM et al., *Prev Sci* 2019; 20: 947–958.

# Solutions toward *Responsible Prescribing*: Guidance



## **Opioid Prescribing Guidelines** March 2016

- Intended for primary care providers
- Applies to patients >18 years old in chronic pain outside of end-of-life care
- **Focuses on:**
  - Determining when to initiate or continue opioids for chronic pain
  - Opioid selection, dosage, duration, follow-up and discontinuation
  - Assessing risk and addressing harms of opioid use



Dowell, Compton, Giroir.  
2019;322(19):1855–1856

## **Patient-Centered Reduction or Discontinuation of Long-term Opioid Analgesics:**

- Focuses on:* **The HHS Guide for Clinicians**
- (1) Criteria for reducing or discontinuing opioid therapy
  - (2) Considerations prior to deciding to taper opioids
  - (3) Ensuring patient safety prior to initiating taper
  - (4) Shared decision-making with patients
  - (5) Rate of opioid taper
  - (6) Opioid withdrawal management
  - (7) Behavioral health support
  - (8) Challenges to tapering

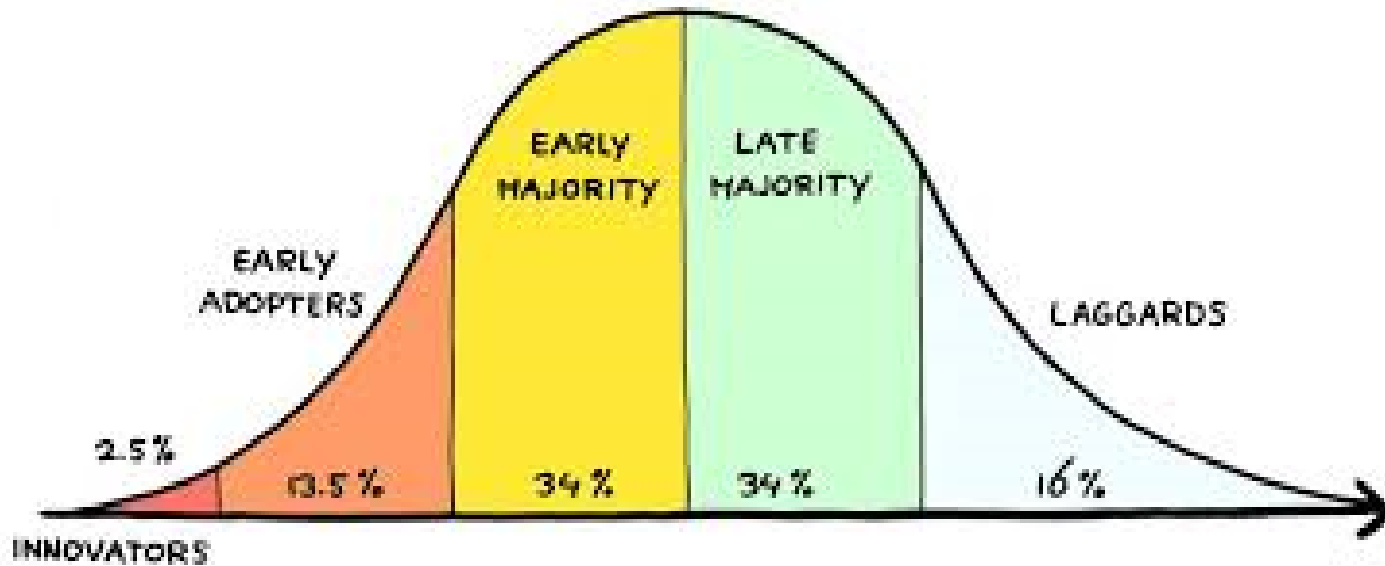
*Dosage changes, particularly rapid reductions in dose, can harm patients or put them at risk if not made in a thoughtful, deliberative, collaborative, and measured manner.*

# So...what Should We Do To Change The Drug Abuse Trajectory?

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Drug abuse Prevention can be  
seen as *experimental  
epidemiology*.

## *Traditional View of Innovation: Top Down*



Rogers, 1962

# Develop a Learning Health Care System

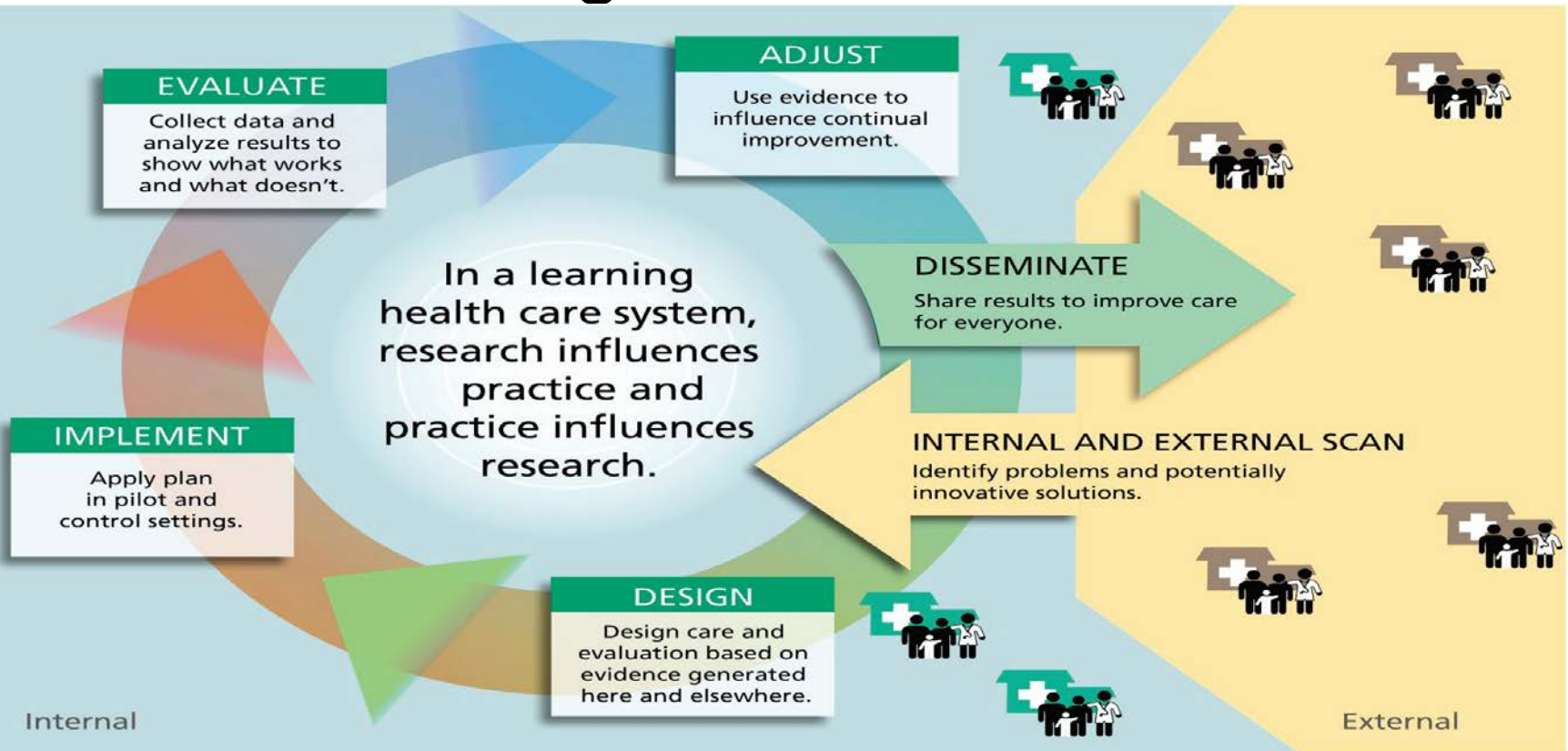
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- Using *Public Health Needs* to *Generate Meaningful Research Questions*
- Ensuring that *Research Findings are Applied to Practice*



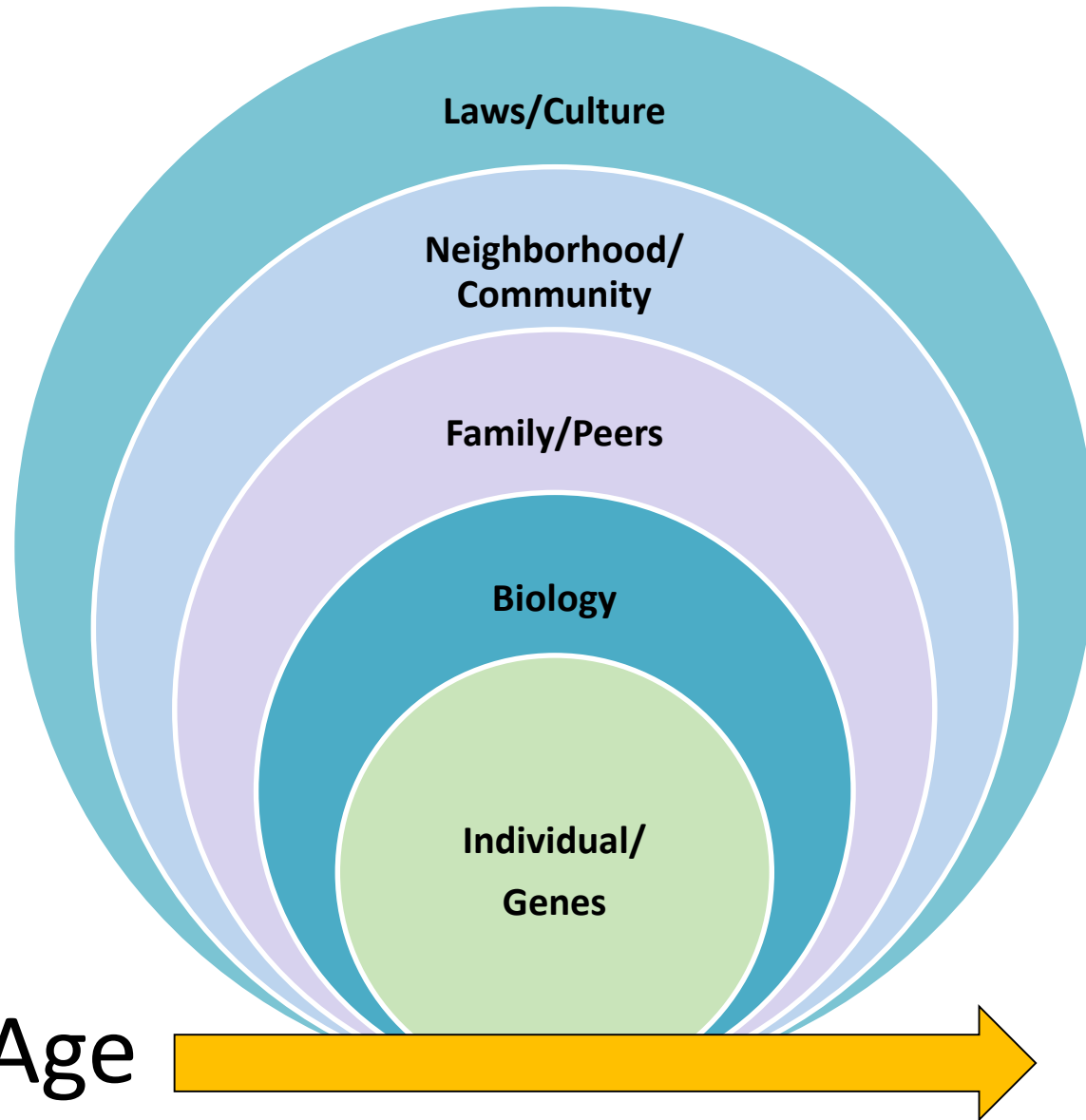


# LHS : Dialogue and Iteration

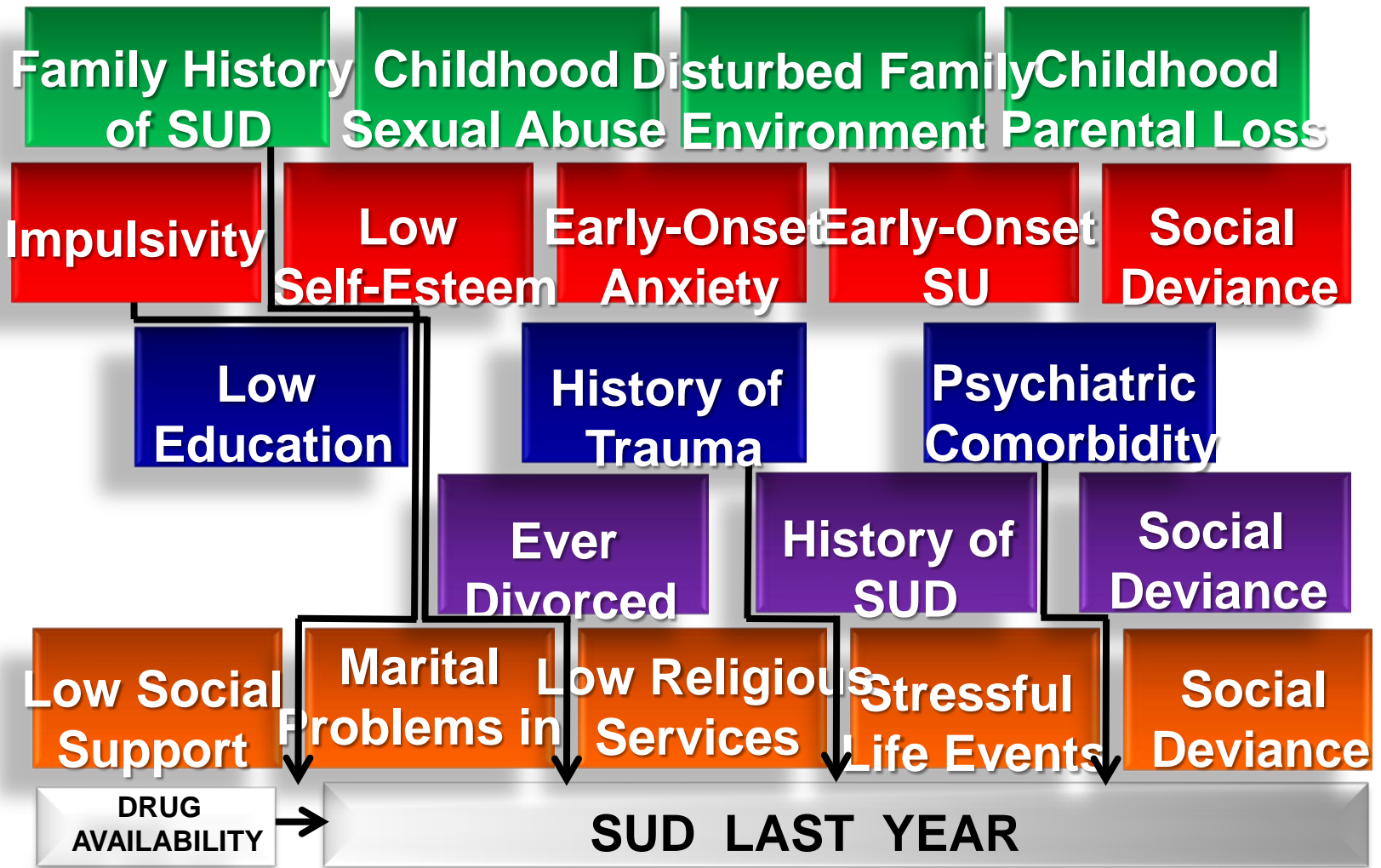


Greene et al., Ann Int Med,  
2012

# There are Multiple Risk Factors



# RISK FACTORS FOR SUBSTANCE USE DISORDER



# How Prevention Interventions Work

## Background Factors

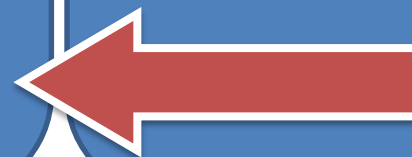
- Age
- Gender
- Race/ethnicity
- Poverty level
- Genotype

## Modifiable Risk & Protective Factors

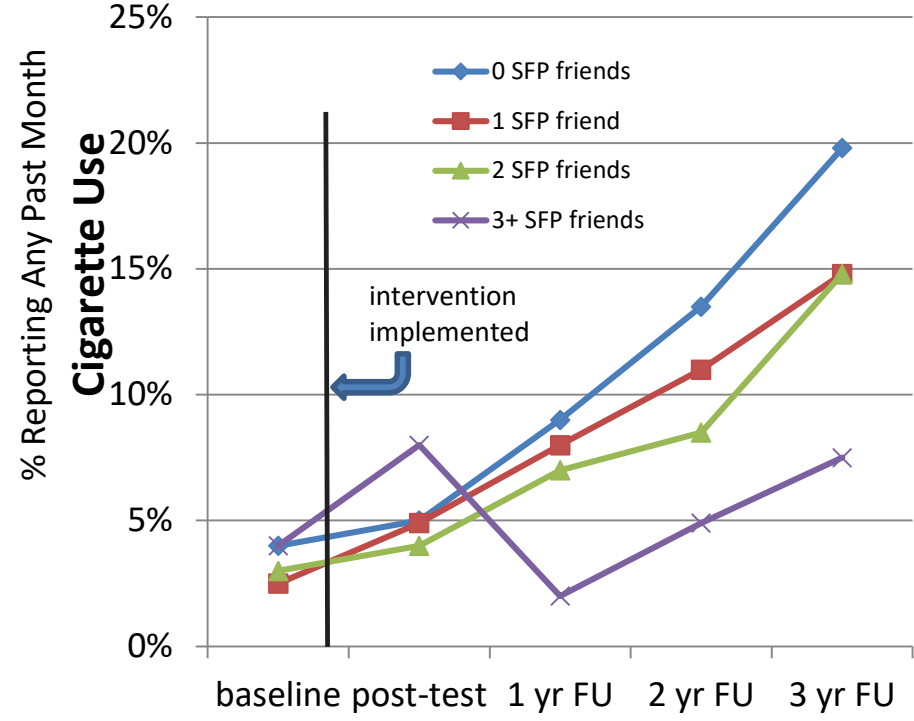
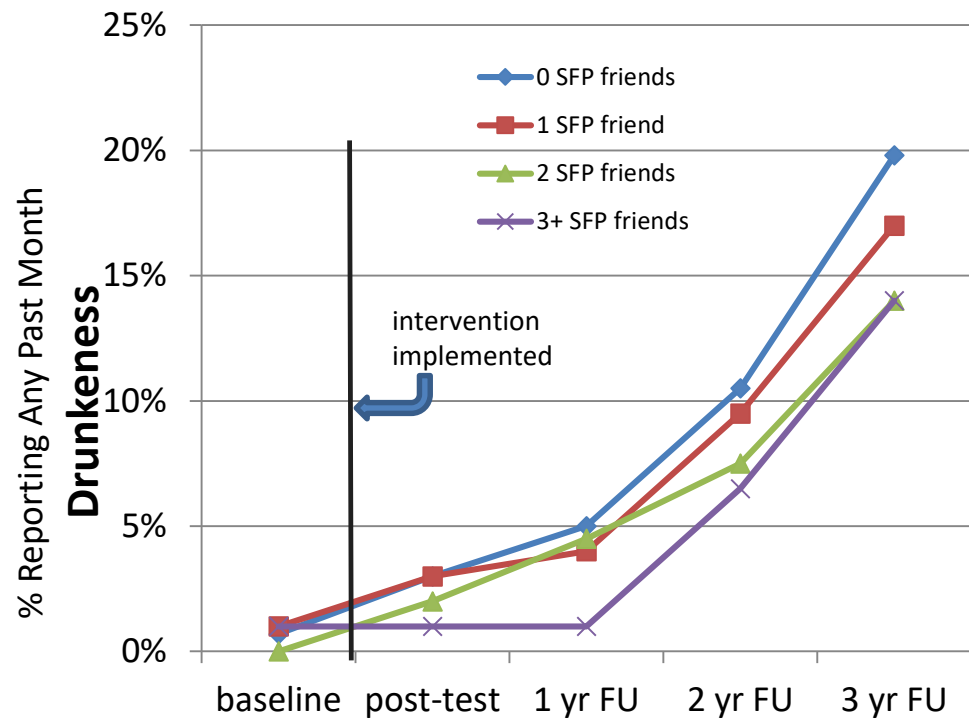
- Early aggression
- Social skills deficits
- Academic problem
- Misperceived drug use norms
- Association with deviant peers
- Neighborhood availability
- Media glamorization
- Parental monitoring and support

## Interventions

- Parent skills training
- Social skills training
- Self-regulation
- Impulse control
- Tutoring
- Norms training
- Refusal skills
- Community policing
- Health literacy



# Interventions Can Influence the Behaviors of Nonparticipants Through *Friendship Networks*



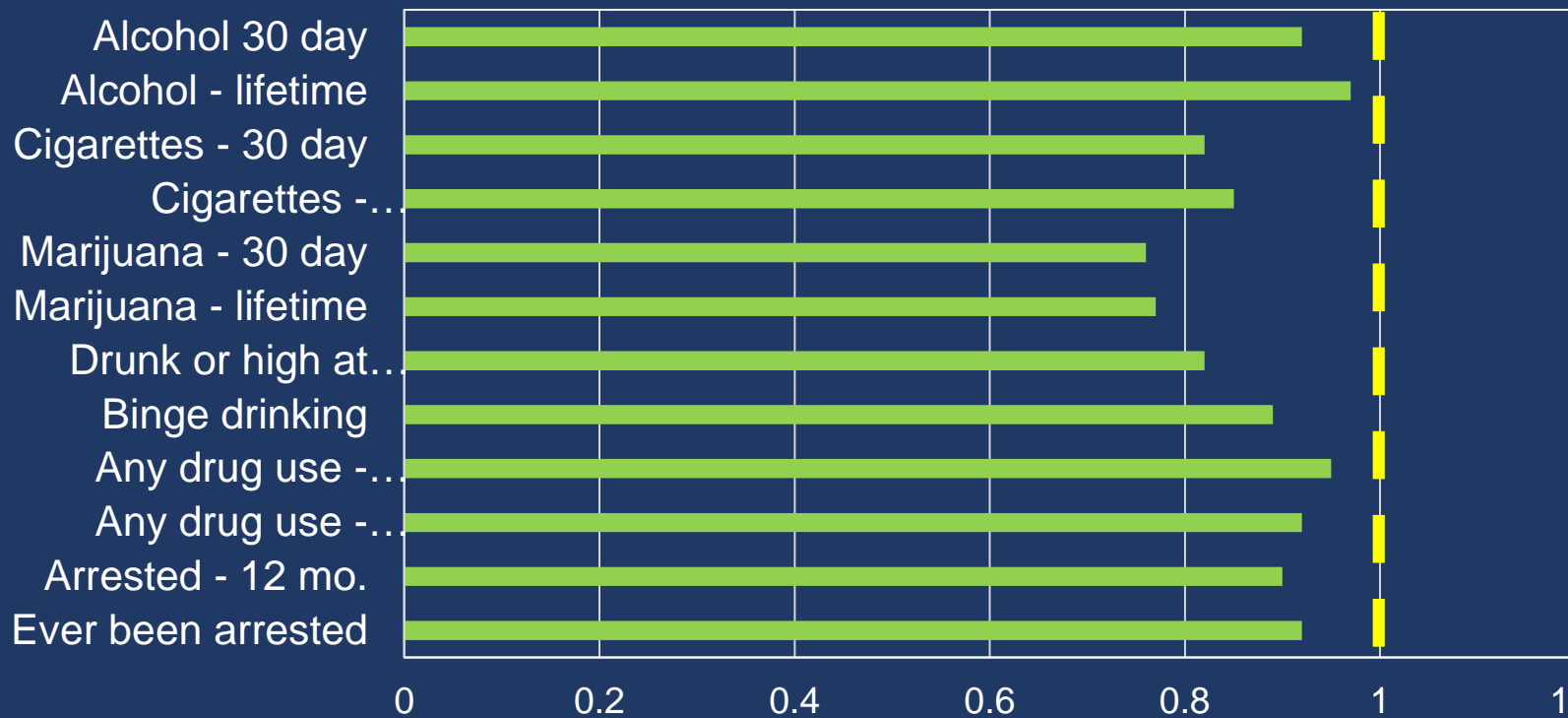
*Adolescents with 3+ friends participating in the Strengthening Family Program were less likely to use cigarettes or get drunk than those who had no friends in the program (3 yrs post intervention).*

# Emerging Research Issues on E-cigarettes

- Potential benefits and harm at the individual and public health level
- E-cigarette use as cigarette-smoking cessation
- E-cigarette as a gateway to combustible cigarette use (especially among youth)
- E-cigarette use leading to re-normalization of cigarette smoking (especially among youth)
- Exposure of nicotine to the developing brain and how changes in e-cigarette devices may impact this exposure
- Concurrent use of e-cigarettes with marijuana and/or other substances

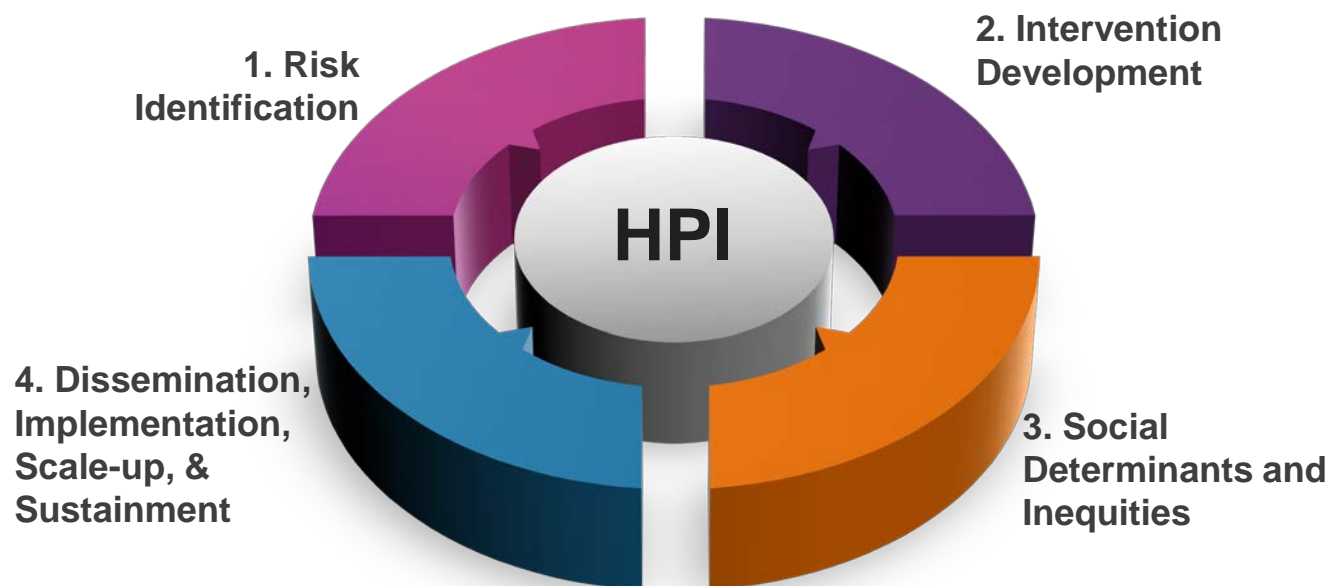
# Public Health Benefits 16 Years After State Policy Change: Communities That Care in Pennsylvania

School districts (388) that implemented CTC (52%) had significantly lower levels of adolescent substance use, delinquency, and depression (odds ratios).



*Chilenski SM et al., Prev Sci 2019; 20: 947–958.*

# HEAL Prevention Initiative





# Cooperative Research Projects

## Community and Social Services

- Tribal communities (urban, rural, reservation)
- Young adult parents with history of SU in rural community
- Homeless youth
- Child welfare involved families

## Healthcare

- Brief intervention in the Emergency Department
- School based health centers – video game intervention
- Behavioral health treatment settings

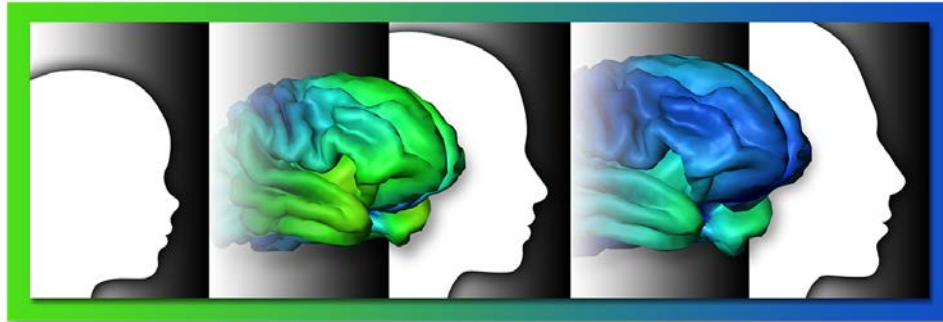
## Juvenile Justice

- Adolescents and young adults with and without substance use disorder in justice settings
- Youth transitioning out of detainment

# **Structural and Social Challenges** for SUD During SARS-CoV-

- 2**
  - Stress and Stigma**
  - Limited medication access and limited peer-support groups/social connection**
  - Social distancing increases likelihood of opioid overdoses happening with no observers who can administer naloxone**
  - Job losses**
  - Housing instability/homelessness**
  - Incarceration (>50% of U.S prisoners have SUD) and prison populations are at greatest risk SARS-CoV-2 transmission**





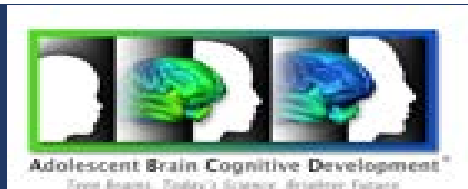
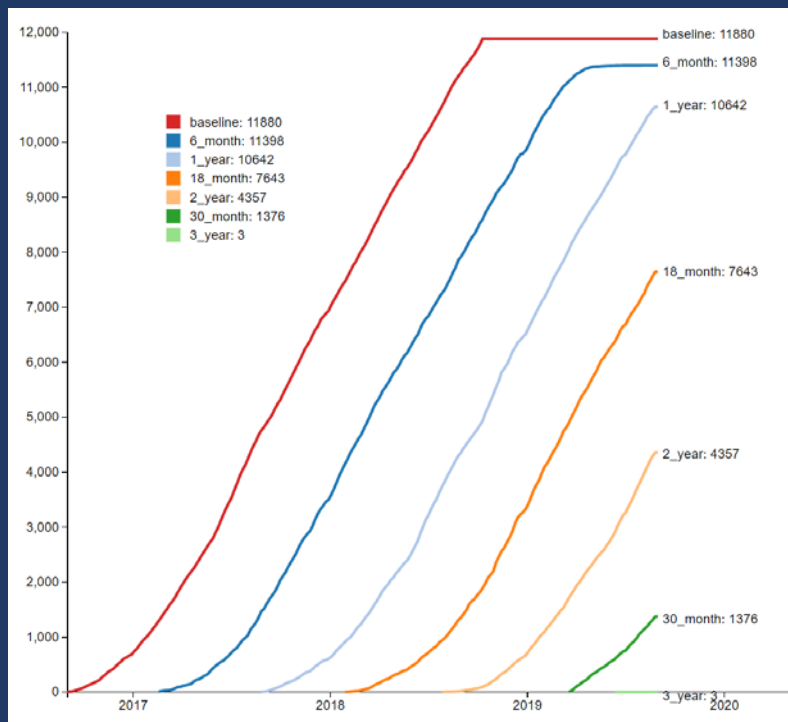
## Adolescent Brain Cognitive Development<sup>®</sup>

*Teen Brains. Today's Science. Brighter Future.*

***A longitudinal study of about 10,000 children from ages 9-10 through early adulthood to assess factors that influence individual brain development trajectories and functional outcomes***

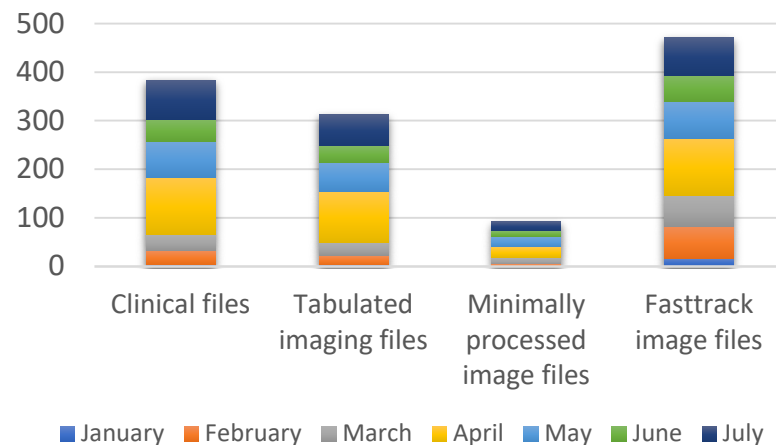


# Adolescent Brain Cognitive Development (ABCD) Study



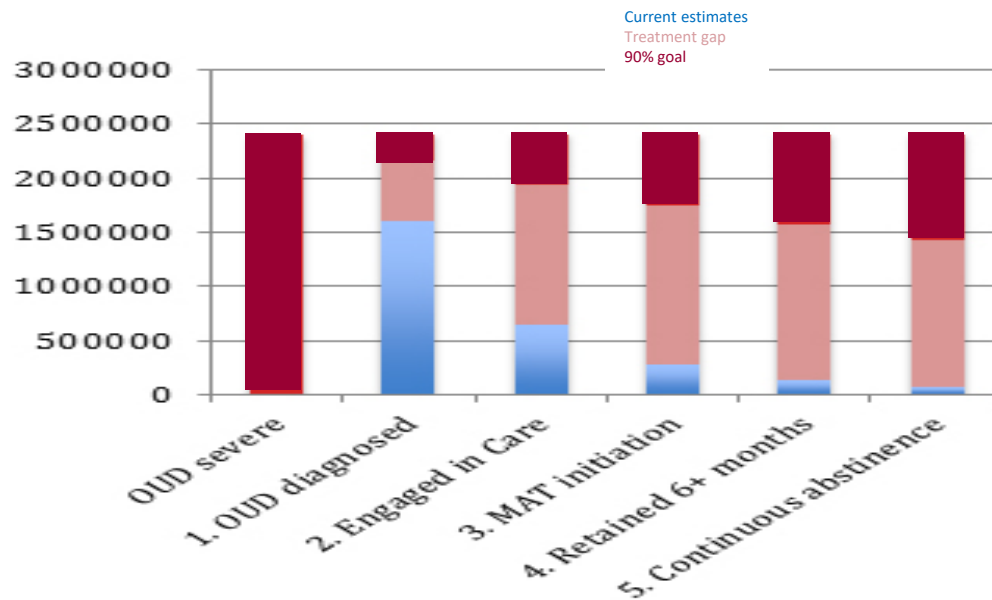
Full Baseline Curated Data Released April 2019  
ABCD Data Release 2.0.1 available now

## Unique Users - 2019



# Treatment is not nearly enough

## OUD Cascade of Care in USA



Williams AR, Nunes E, Olfson M. Health Affairs Blog, 2017