

ADHD, Substance Use Disorders & Stimulant Misuse



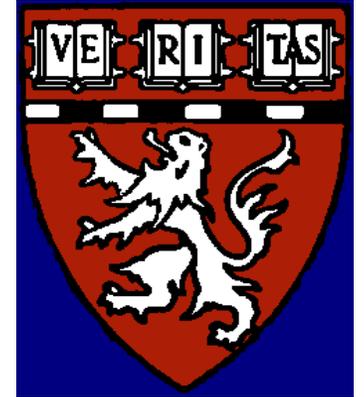
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PSYCHIATRY ACADEMY



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Faculty Disclosure

- **Timothy Wilens, M.D. has served as a consultant, or has received grant support from the following**
 - **US Food and Drug Administration, NSPHS: NIH (NIDA)**
 - **Licensing agreements with 3D Therapeutics**
 - **Clinical care: MGH, Bay Cove, Gavin Foundation, Major/Minor League Baseball**
 - **(Co)Edited Straight Talk About Psychiatric Medications for Kids (Guilford); ADHD Across the Lifespan (Cambridge), Update in Pharmacotherapy of ADHD (Elsevier)**
 - **Some of the medications discussed may not be FDA approved in the manner in which they are discussed including diagnosis(es), combinations, age groups, dosing, or in context to other disorders (eg, substance use disorders)**



Diagnosis of ADHD

- **Developmentally inappropriate symptoms**
 - **6/9 Symptoms of Inattention, Hyperactivity or Combination**
 - **5/9 if ≥ 17 years of age (adult)**
 - **95% of cases are either combined or inattentive subtype**
- **Age of onset ≤ 12 years**
- **Not accounted for by other disorder**
 - **Can make diagnosis of Autism Spectrum and ADHD**
- **Diagnosis Clinically Derived**
- **Rating Scales Helpful (Parent, School)**
 - **WHO – ADHD (ASRS) (<https://add.org/adhd-test/>)**
 - **DSM V, Conners, Brown, Other Scales**



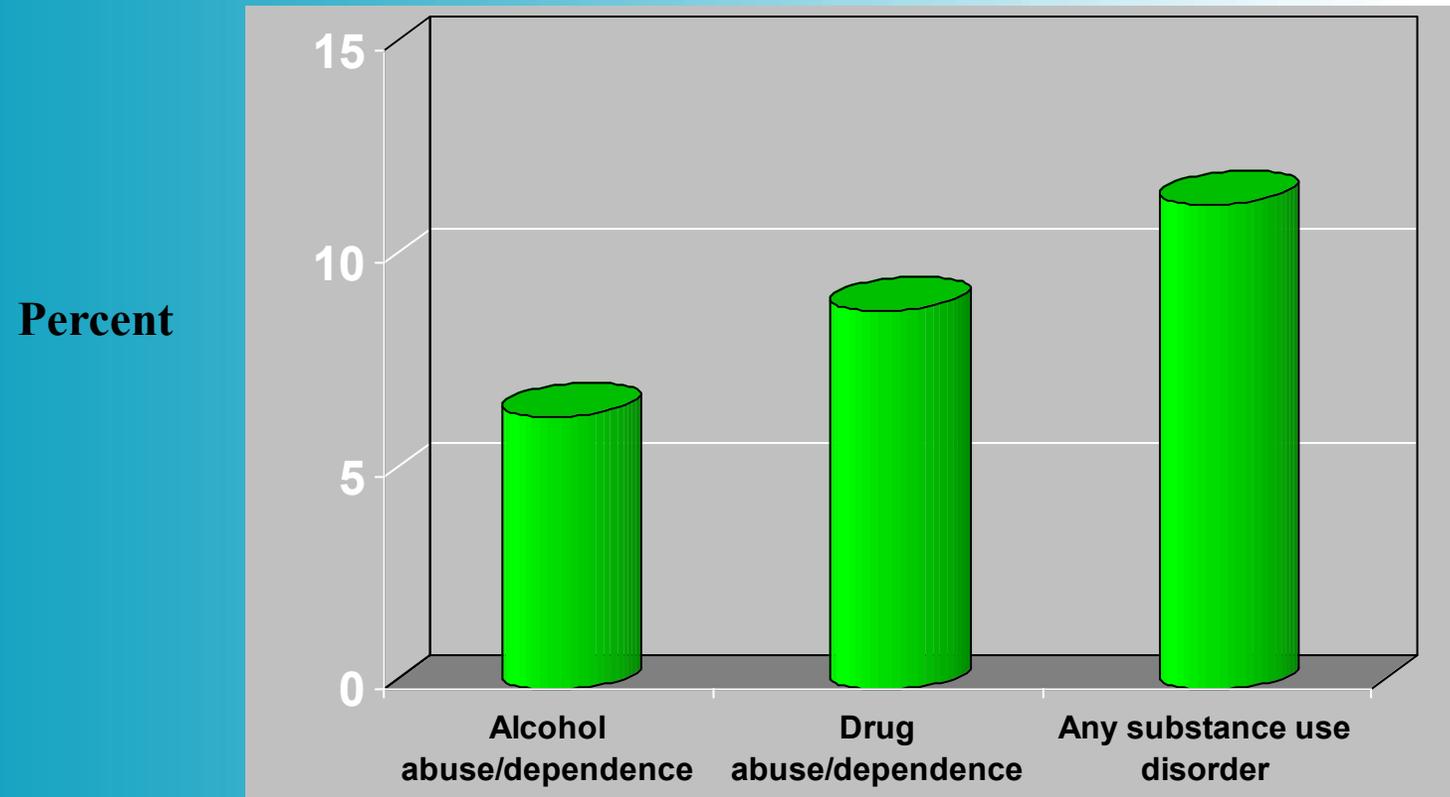
Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist

Patient Name	Today's Date				
Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.					
	Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?					
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?					
3. How often do you have problems remembering appointments or obligations?					
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?					
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?					
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?					
Part A					
7. How often do you make careless mistakes when you have to work on a boring or difficult project?					
8. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?					
9. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?					
10. How often do you misplace or have difficulty finding things at home or at work?					
11. How often are you distracted by activity or noise around you?					
12. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?					
13. How often do you feel restless or fidgety?					
14. How often do you have difficulty unwinding and relaxing when you have time to yourself?					
15. How often do you find yourself talking too much when you are in social situations?					
16. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?					
17. How often do you have difficulty waiting your turn in situations when turn taking is required?					
18. How often do you interrupt others when they are busy?					
Part B					

WHO ADHD Screener <https://add.org/wp-content/uploads/2015/03/adhd-questionnaire-ASRS111.pdf>



Lifetime Prevalence Substance Use Disorders (SUD) in Adolescents



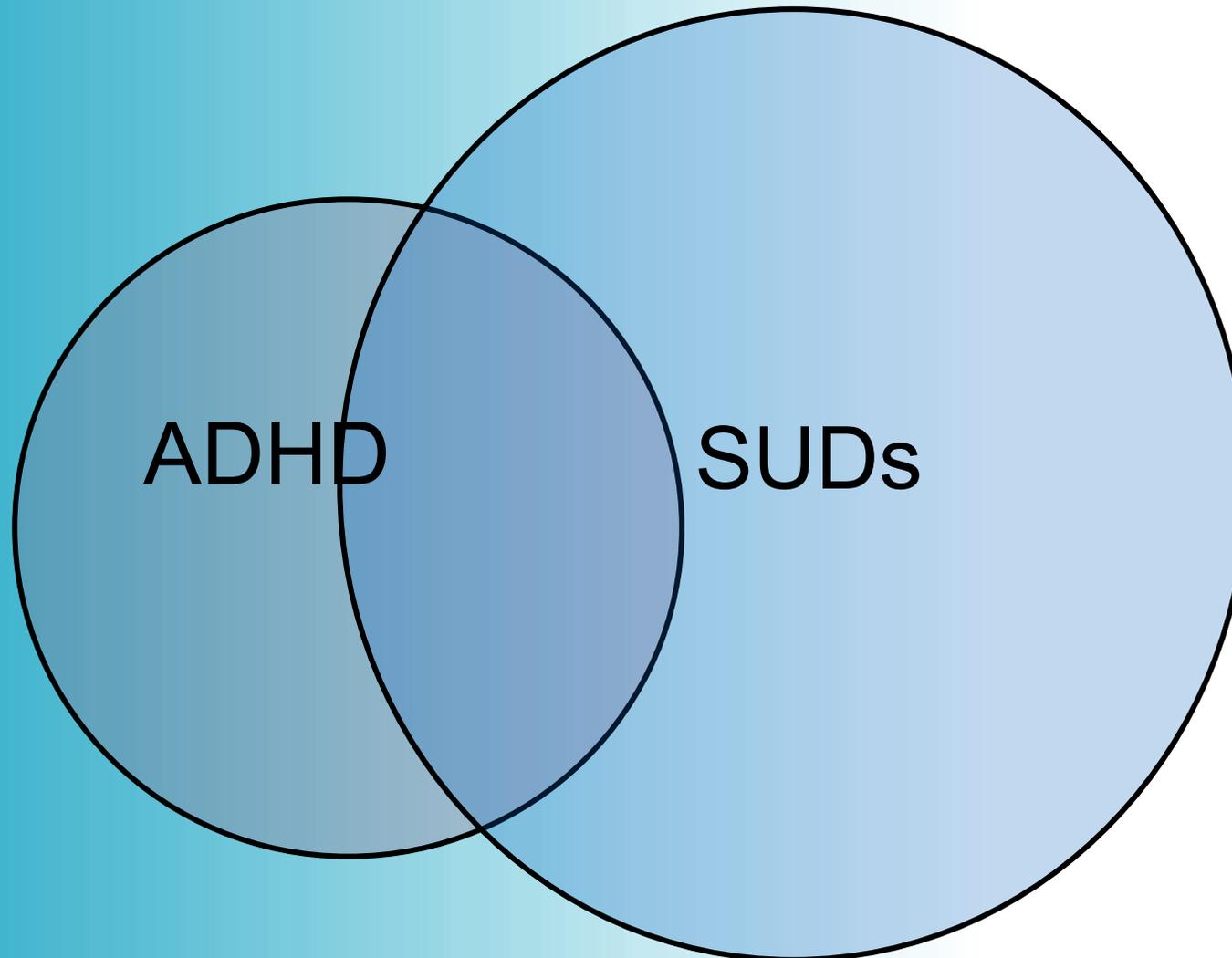
Merikangas et al. J.Am.Acad.Child Adolesc.Psychiatry, 2010;49(10):980-989

Overlap between ADHD and SUDs



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A collection of nicotine vaping products including a large e-cigarette case, a small e-cigarette, and a pen-style e-cigarette.

Nicotine Vaping and ADHD

- High rates of nicotine use, and vaping in ADHD vs nonADHD
- Higher rates of ADHD in e-cig use (vs non ecig use)
- Nicotine may be experienced differently in ADHD vs controls
 - More pleasurable experiences
 - No difference in “unpleasant” experiences
 - Similar response to other “predisposed” substances (e.g. alcohol)
- Previous work has shown nicotine enhanced cognitive functioning in ADHD*



A More Complicated Course of SUD is Associated with ADHD

- **More severe SUD**
- **Higher rates of other psychiatric comorbidities (eg, conduct/antisocial disorders)**
- **Less remission from SUD**
- **Longer course of SUD**
- **Lower retention in cigarette/SUD treatment**



Internet Gaming Addiction and ADHD



- **Higher risk for internet gaming addiction in ADHD**
- **Study of young adults with internet gaming (N=87) and controls (N=87)**
 - **Higher risk for ADHD (vs controls)**
 - **Prominent impulsivity and hostility (mood dysregulation) mediate internet gaming disorder in ADHD***

Yen et al., Addictive Behaviors Vol 64, January 2017, pp 308-313

Major Brain Circuits Involved in Addiction



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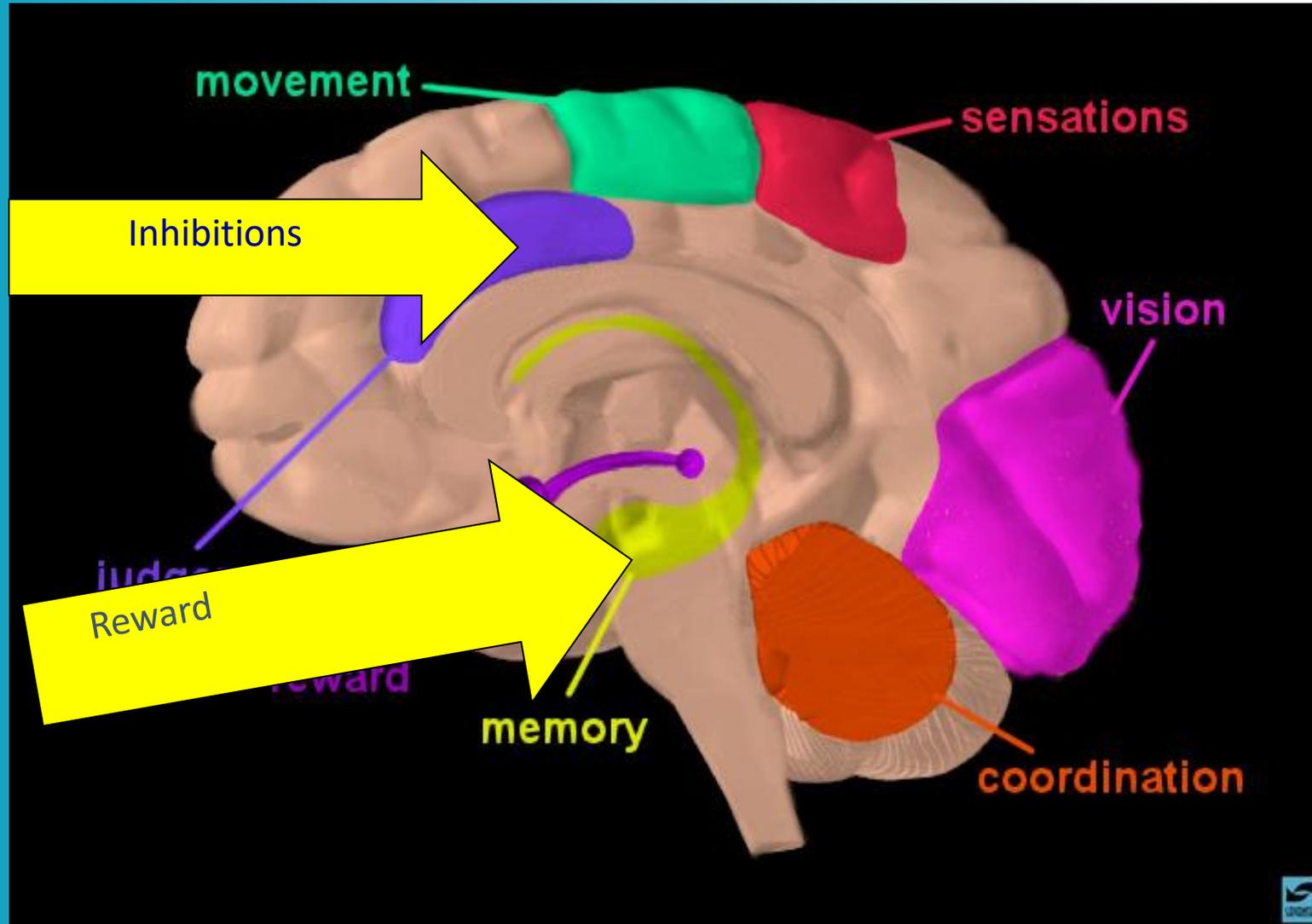


Photo courtesy of the NIDA Web site. From A
Slide Teaching Packet: The Brain and the
Actions of Cocaine, Opiates, and Marijuana.



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Does Treatment of ADHD in Childhood Impact later SUD?



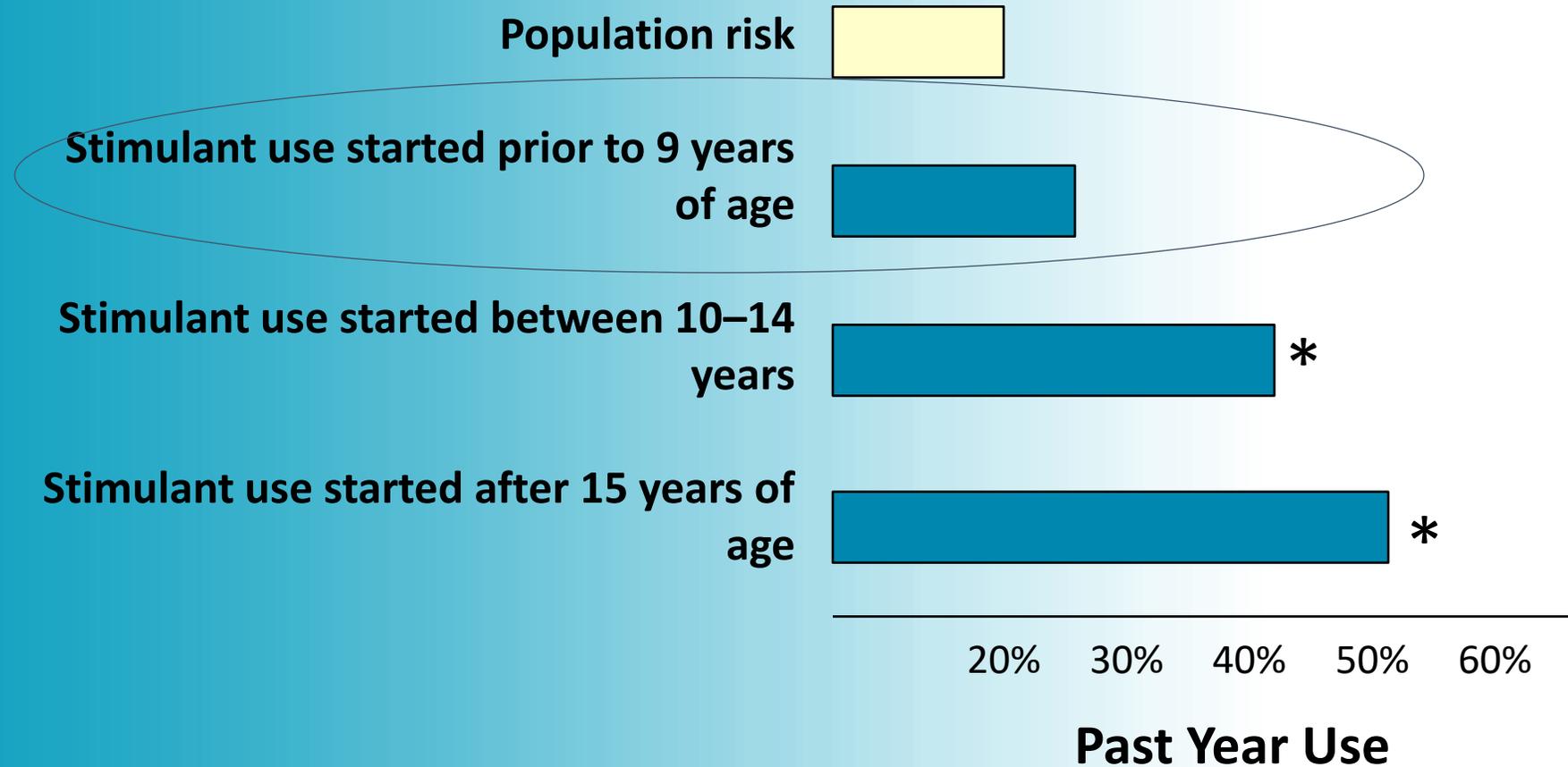
Long-Term Studies of ADHD: Stimulant Treated vs Untreated and Subsequent Substance Use Disorders

Study	Country	Total: N	ADHD: N	Age	Main Findings Tx vs UnTx
Quinn et al. 2017	USA	146,000,000	2,993,887	15–42 yrs	Within group ↓
Sundquist et al. 2015	Sweden	551,164	9,424	Mean 15 yrs	Between group ↔
Chang et al. 2014	Sweden		38,753	8–46 yrs	Between group ↓
Steinhausen et al. 2014	Denmark		20,742	11–20 yrs	Between & Within groups ↓

(from Boland et al, J Psychiatric Research, 2020)



Early ADHD Treatment Reduces Marijuana Use



10 Cohorts of high school seniors 2005 to 2014 (N = 40,358; ~10% with ADHD; from 3-6 years of stim).

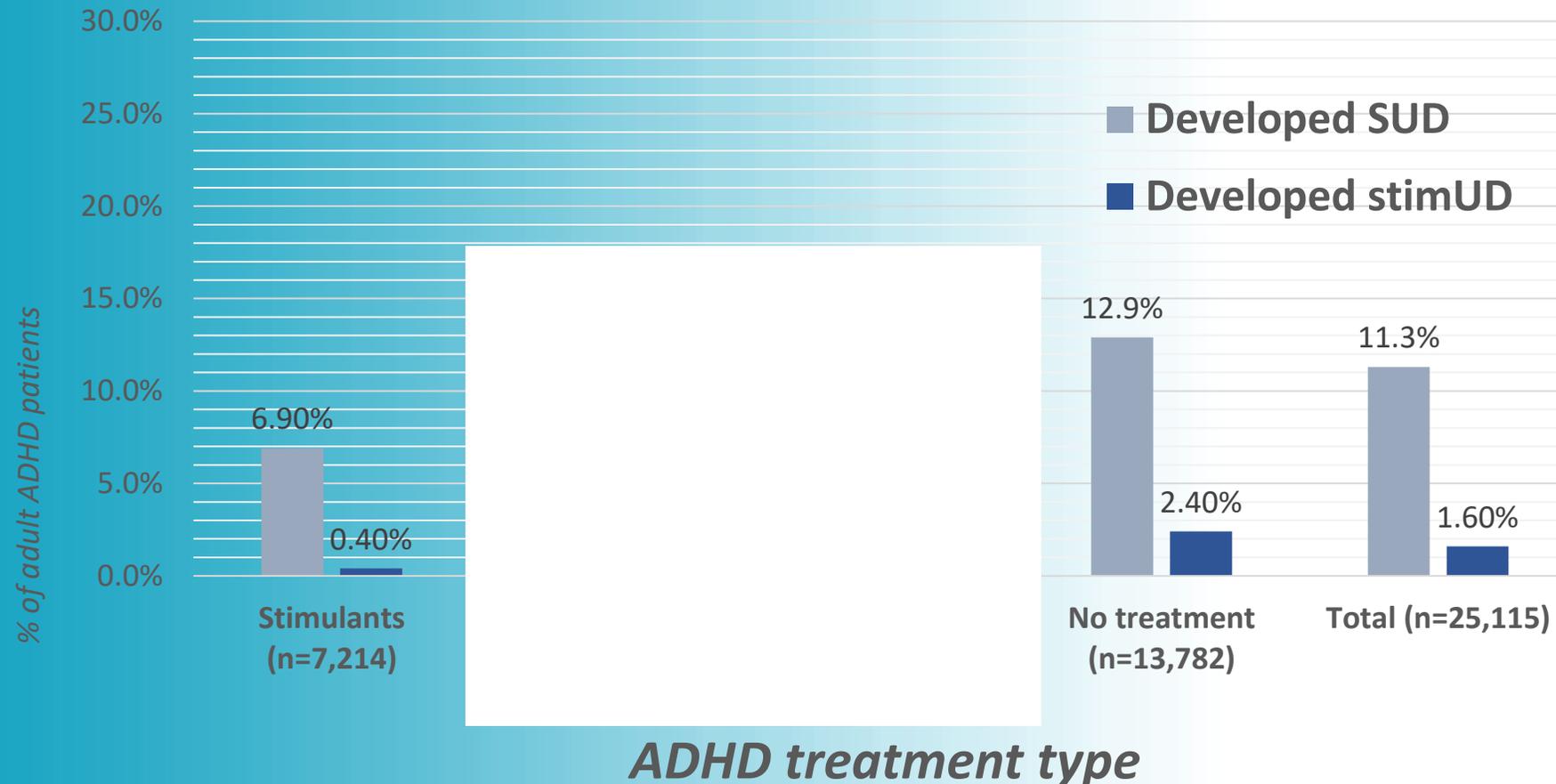
*P < .001 vs controls.

McCabe SE, et al. *J Am Acad Child Adolesc Psychiatry*. 2016;55(6):479-486.

Treatment of ADHD in Adults with Stimulants Does Not Increase Stimulant (stimUD) or Substance Use Disorders (SUD)



[N=25,115 Adults with ADHD, MGB Electronic Health Records, Mean age 31.4 years, f/u mean 683 days]



(Rao V et al, Presentation to FDA 3/19/25; in preparation 2026)



Cannabis and ADHD

- **Most common “drug” used/misused in ADHD**
- **ADHD is second most common comorbidity in cannabis use disorder**
- **Cannabis associated with neuropsychological impairment**
 - **Acute effects**
 - **Chronic - persistent executive dysfunction if marijuana initiated in adolescence (early)**

Wilens et al., J Am Acad Child Adolesc Psych: 2011; Am J Addict 2010: 16:14-23

Cooper et al. Eur Neuropsychopharm 2017: 27:795-808

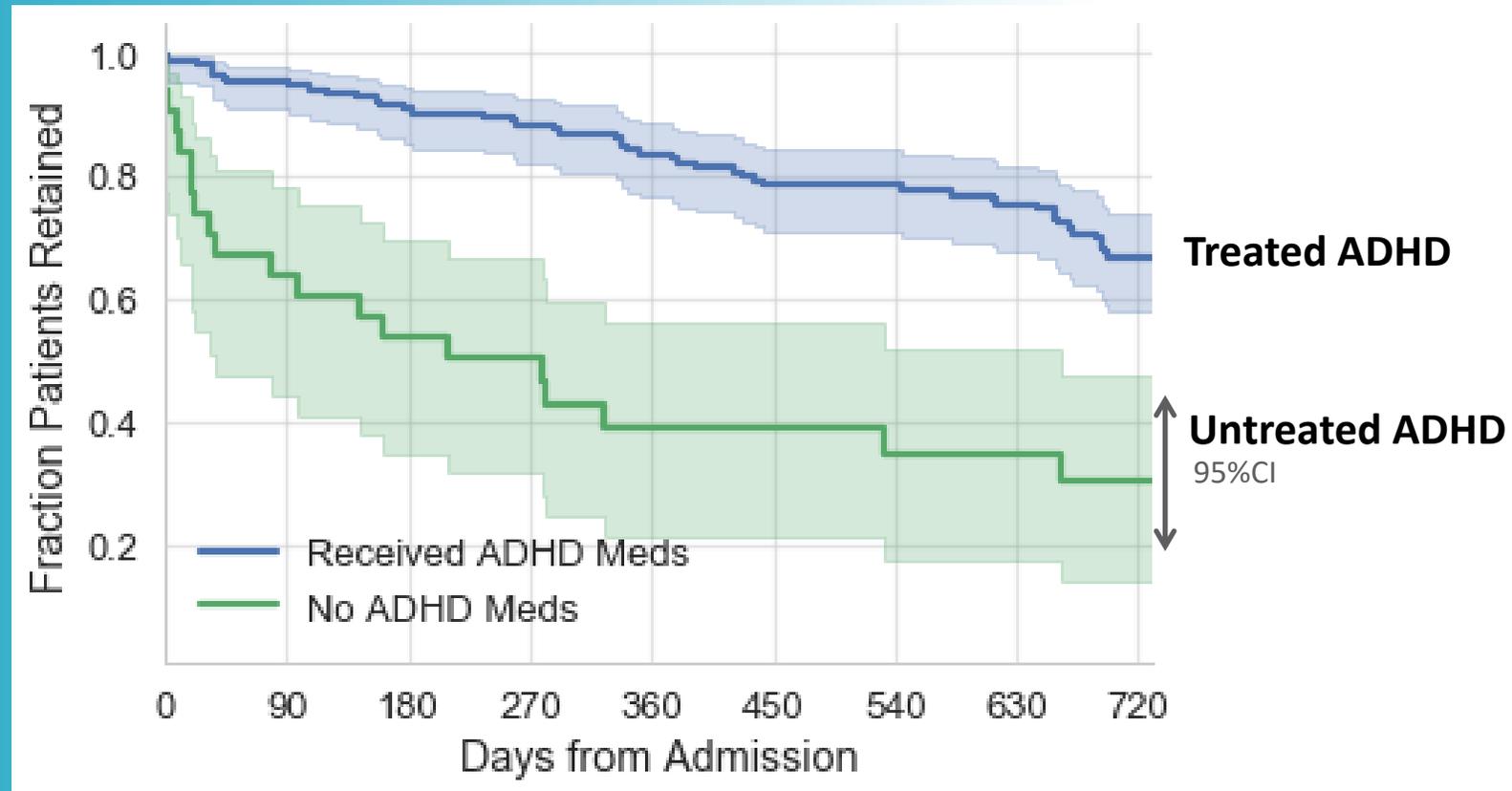
MGH Study: Medication Treatment of ADHD Improves Retention in SUD Treatment



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N=171 Treated ADHD
N=32 Untreated ADHD
Early Tx >> later Tx [90d]

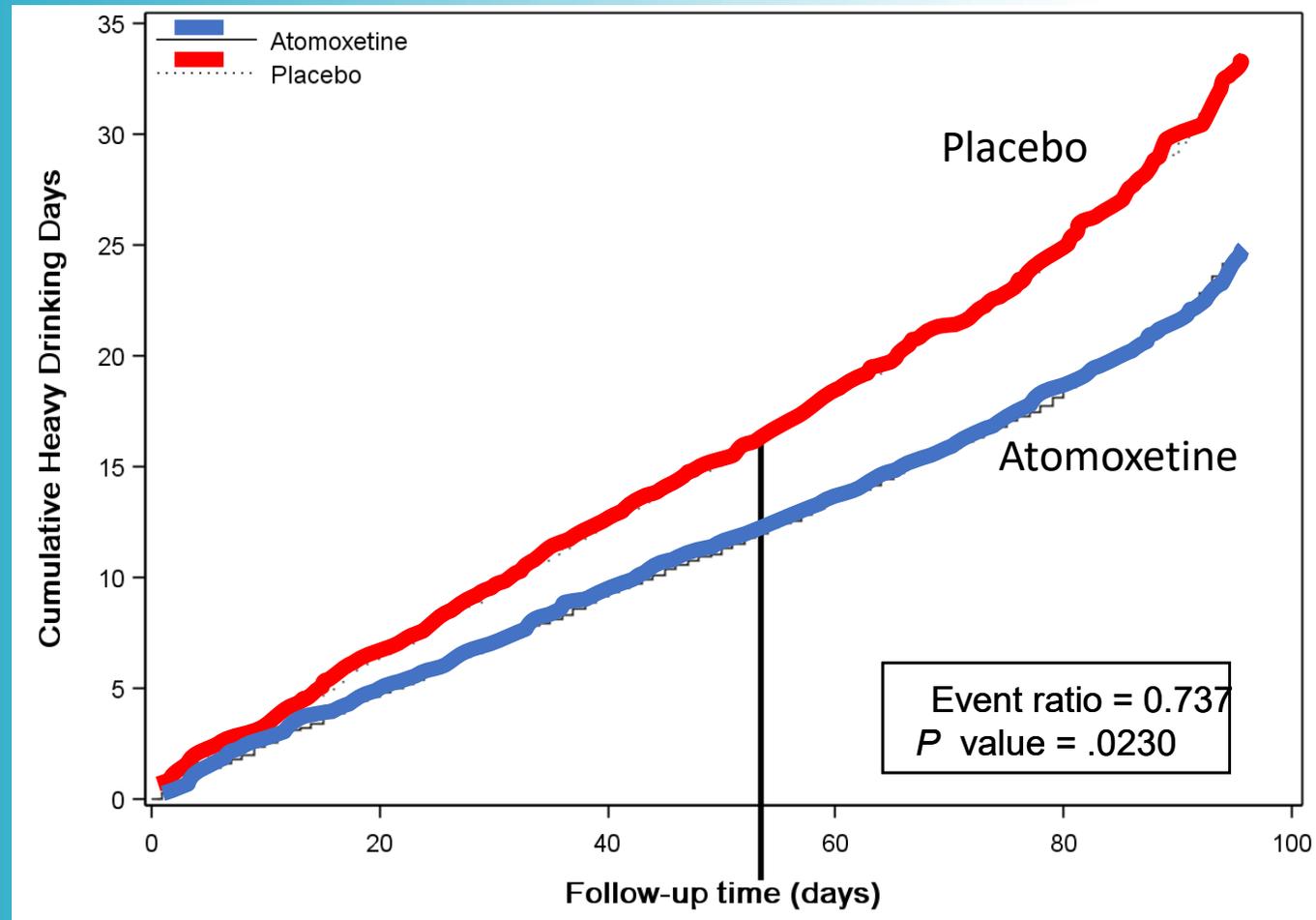


Atomoxetine Improves Heavy Drinking in Recently Abstinent Adults



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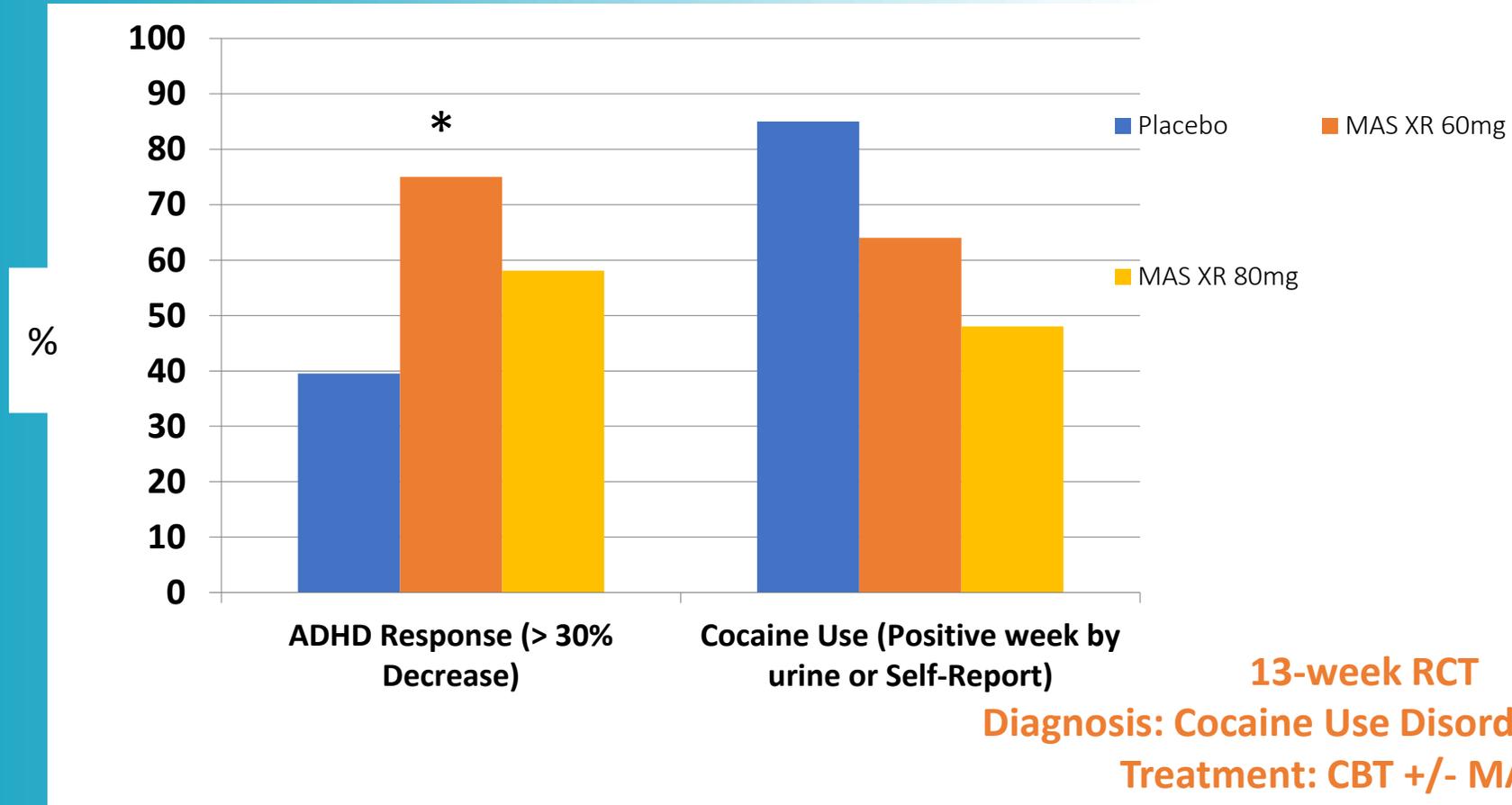


An event ratio of .737 indicates that, relative to patients treated with placebo, atomoxetine-treated patients experienced an approximately 26.3% greater reduction in the rate of heavy drinking. Separation between groups first occurred at day 55.

Wilens TE, et al. *Drug Alcohol Depend.* 2008;96(1-2):145-154. Adler L, et al. *Am J Addict.* 2009;18(5):393-401.



Higher Dose MAS XR is Helpful in ADHD and Cocaine Use Disorder in Patients with OUD



Strategies for ADHD and SUD



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In context to SUD, ADHD treatment should be considered

If misuse or less severe SUD, treat ADHD concomitantly (e.g. smoking MJ sometimes)

More severe SUD --> address SUD (e.g. daily MJ) and treat ADHD

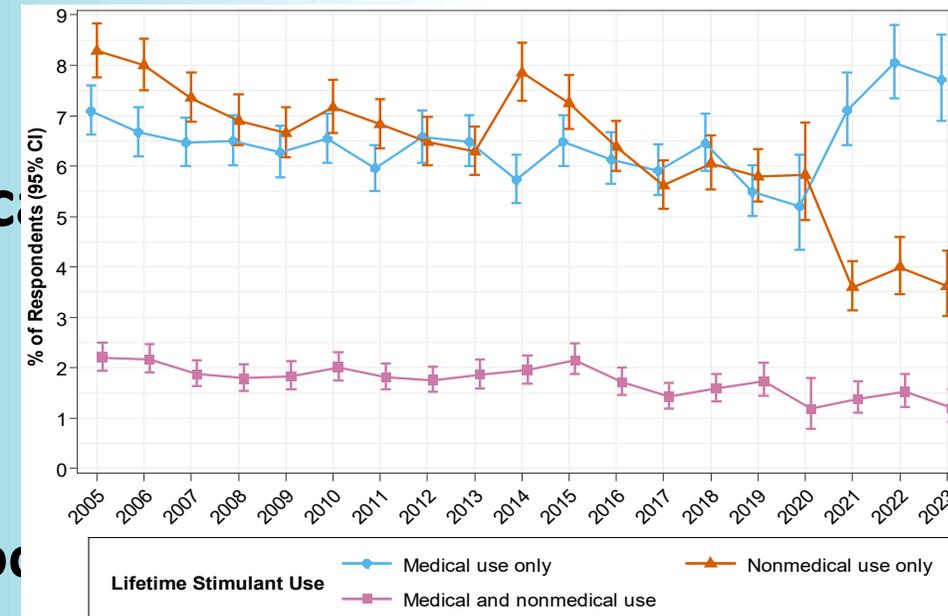
In context to SUD ->use CBT, nonstimulants, pro-drug/extended-release stimulants (may need higher dose)

Careful with immediate release stimulants, use abuse-deterrent/extended release stimulants when available

Stimulant Misuse and Diversion



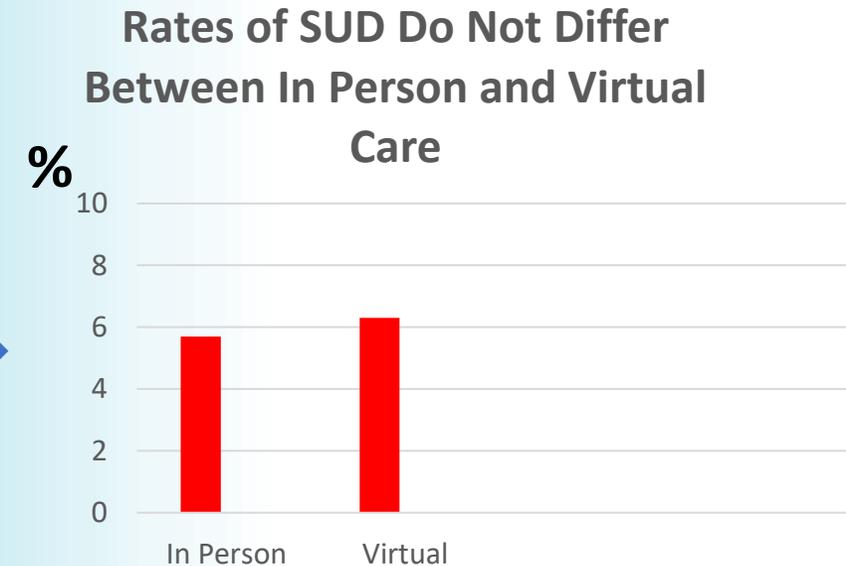
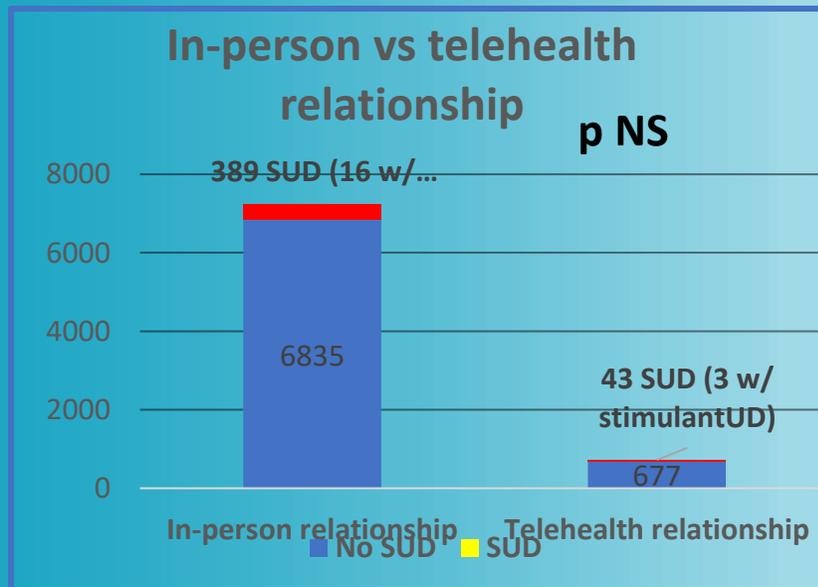
- N > 120 studies; mostly survey studies in college students (80%)
- 10% to 20% with nonmedical use of stimulants
- 65% to 85% of stimulants diverted from “friends”
 - Majority not “scamming” local practitioners
 - Not seen as potentially dangerous



Telehealth Compared to In Person Experience Does Not Increase Subsequent Stimulant or other SUDs



(N=7944 patients)



Rao et al, Am J Psychiatry, 2025



Summary

- **Since ADHD is a risk factor for cigarette smoking and SUD, teenagers and young adults with ADHD should be queried for both potential problems**
- **ADHD should be considered in adolescents and adults who smoke cigarettes and/or have SUD**
- **Treating ADHD helps protect against the onset of cigarette smoking, SUD, and SUD-related criminality**
- **Strategies exist for management of substance use and use disorder in ADHD**
- **Since stimulants can be misused, in high risk groups consider mitigation strategies (e.g. ER vs IR stimulants, education and monitoring)**



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QUESTIONS?