ECHO IDAHO

Substance Use in Idaho

Treating Adult ADHD

Perspectives from Addiction Medicine

4/9/2026

Norman Litchfield, MD, FASAM

Idaho Society of Addiction Medicine

University of Idaho
School of Health and Medical Professions

Project ECHO

Disclosures

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Some slides adapted with permission from Andrea Truncali, MD, MPH; Lauren Moran, MD, MPH; Leah Bauer, MD, FASAM; and Margaret Chaplin, MD, FASAM; ASAM Annual Meeting, Washington, DC; 4/14/23

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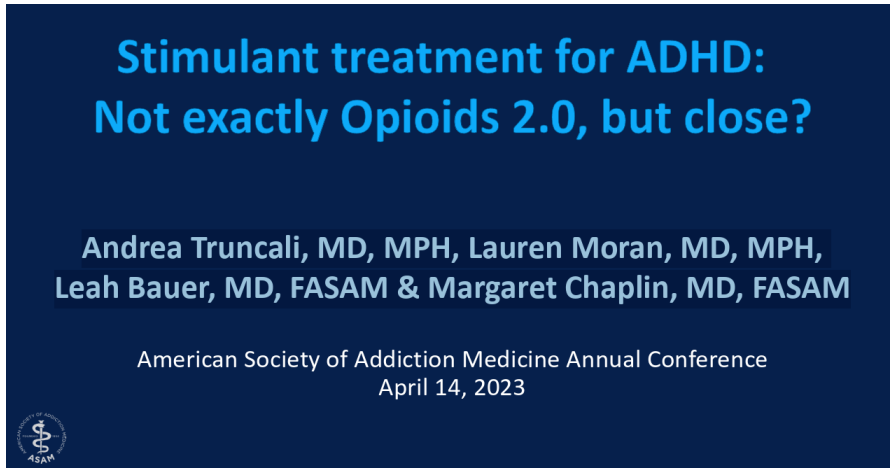


Learning Objectives

1. Increase awareness for the complexity involved in accurately diagnosing Attention-Deficit / Hyperactivity Disorder (ADHD) in adults

2. Discuss the evidence for stimulant treatment of adult ADHD alone, and when comorbid with a Substance Use Disorder (SUD)

3. Review the harms associated with stimulant treatment of adult ADHD, including risk of developing a Stimulant Use Disorder (StUD)

Defining Adult ADHD

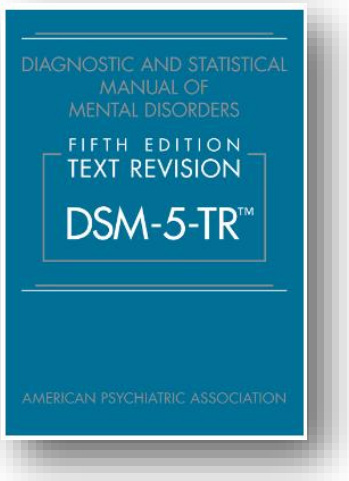
What is Adult ADHD?

ADHD is a real illness with morbidity as well as substantial cost to society[1]

- 3-7% of adults have ADHD[2,3], 10-21% in those with SUD[4]
- ADHD is associated w/ increase in:
  - ✓ Unemployment
  - ✓ Car accidents
  - ✓ Mortality
  - ✓ Impaired relationships
  - ✓ SUD (Previously thought that tx of childhood ADHD prevents SUD, but evidence supporting this is mixed[5])

1. Shein et al, J Manag Care Spec Pharm, 2022
2. DSM-5 TR
3. Song et al, J Glob Health, 2021
4. Rohner et al, Int J Env Res Pub Hlth, 2023
5. Volkow & Swanson, Am J Psychiatry 2008

How is Adult ADHD diagnosed?



5 Symptoms of Inattention

5 Symptoms of Hyperactivity

Symptoms Present < age 12

Symptoms Present in >2 Domains

Reduced Quality of (Social or Work) Life

Not due to any other Mental Disorder

Specifiers:

F90.2 Combined presentation

F90.0 Predominantly inattentive presentation

F90.1 Predominantly hyperactive/impulsive presentation

Adult ADHD: Extension of childhood, distinct entity or undiagnosed comorbidity?

ADHD persists into adulthood at rates of **5%** (Dunedin cohort) to **30-50%** (MTA cohort)

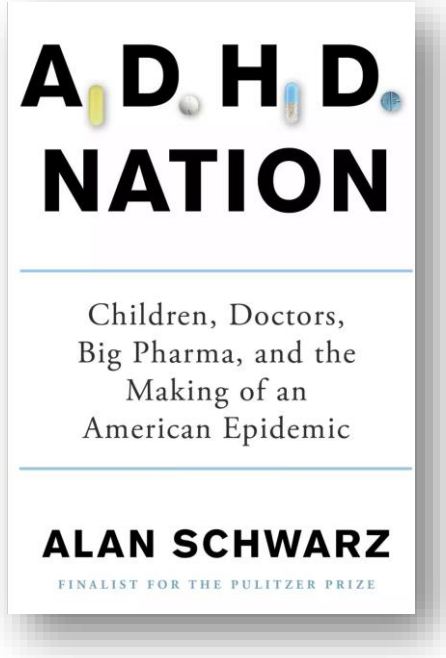
- Moffitt et al. 2015, Dunedin NZ Cohort: 1,072 individuals born in ’72-73, followed until age 38
  - ADHD prevalence: 6% childhood, 3% adult, *w/ “virtually no overlap”;* 3/61 kids w/ ADHD (5%) persisted into adulthood
  - 90% of adults meeting criteria for ADHD lacked h/o childhood ADHD; 55% had SUD
- Sibley et al. 2018, MTA Comparison Cohort: 239 individuals w/o childhood ADHD, followed from ~9yo until ~25yo
  - 95% of individuals who screened positive for adult ADHD excluded in f/u evaluation, most commonly due to heavy substance use
- Ahmad et al. 2019, Berkeley Girls w/ ADHD Longitudinal Study, Comparison Cohort: 87 ♀ w/o childhood ADHD, followed 16 yrs
  - Only 1 out of 17 women with adult-onset ADHD sx had no SUD or other MH dx to explain impairment

DSM-5-TR, 2022 (citing Sibley et al. 2018): ***“ADHD begins in childhood. […] When symptoms of what appears to be ADHD first occur after age 13, they are more likely to be explained by another mental disorder or to represent the cognitive effects of substance use.”***

ADHD: Over or Under Diagnosed?

Is it both? The catchphrase "ADHD is over *and* underdiagnosed" began to be used extensively by ADHD lobby in the 1990s in response to rising prevalence rates[1]

- There is clear evidence for overdiagnosis
  - Broadening of criteria → higher prevalence of dx and stimulant rx for milder symptoms
    - Tx is less effective for individuals w/ milder symptoms[2]
  - Children born earlier in school year are diagnosed and treated w/ greater frequency than those born later in the year[3]
  - US vs International prevalences
- High degree of symptom overlap with SUD and other psychiatric conditions is major cause of misdiagnosis



1. Schwarz, 2016, ADHD Nation (book)
2. Kazda, JAMA Network Open, 2021
3. Layton et al, NEJM, 2018

Malingering and ADHD

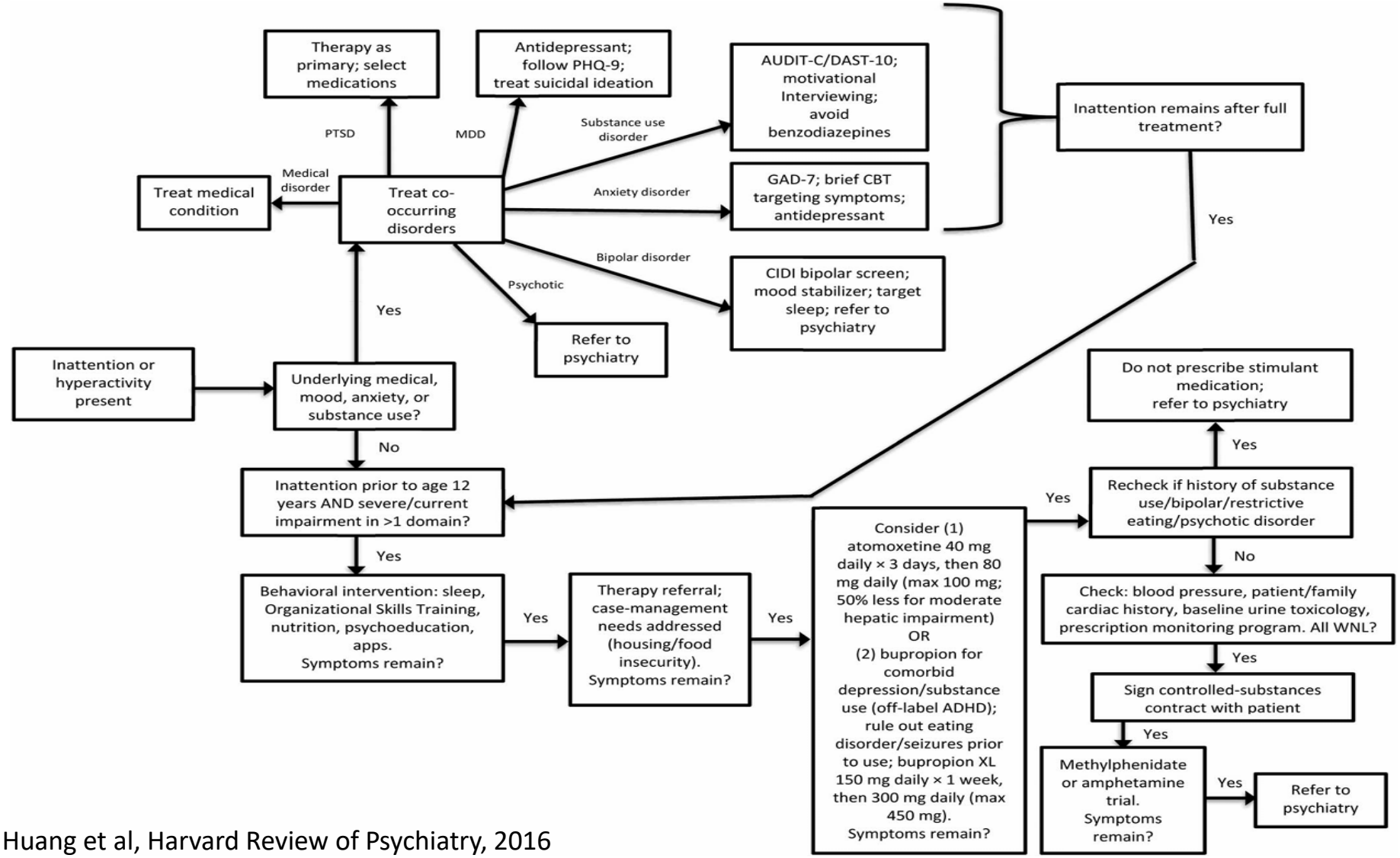
- High prevalence of individuals exaggerating symptoms (22% adults)[1]
- Evidence that some individuals "fake" ADHD symptoms to obtain stimulant rx[2]
- Undergraduates coached about ADHD via internet compared to students w/ ADHD[3]
  - Those coached to fake ADHD met dx criteria for ADHD via symptom checklists
  - Self-rating scales (ie, Connor's Adult ADHD Rating Scale, Adult ADHD Symptom Rating Scale) particularly susceptible to faking and easily accessible online
- Multiple additional studies corroborate findings that symptom checklists alone are unable to distinguish between malingering and ADHD[4,5]

1. Marshall et al, Clinical Neuropsychologist, 2010
2. Fuermaier et al, J Neural Transmission, 2021
3. Sollman et al, Psychological Assessment, 2010
4. Quinn CA, Arch Clin Neuropsychol, 2003
5. Booksh et al, J Atten Disorders, 2010

Why is Adult ADHD diagnosis difficult?

- Checklists are usually positive – what is disorder vs what is normal?
- Multiple causes of inattention
  - Other psychiatric disorders (dep/anx, active SUD, PTSD, SPMI)
  - Lifestyle (poor sleep, stress)
  - Multitasking
  - Cannabis use
- No diagnostic test – requires comprehensive evaluation
- People craving substances may feel convinced of the diagnosis and press hard for tx
- Popular diagnosis on social media – hypochondriasis effect

Addressing ADHD in Primary Care



Huang et al, Harvard Review of Psychiatry, 2016

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Evidence for Stimulant Treatment of Adult ADHD

Conflicts of Interest (COI)

- Many prominent researchers in ADHD receive funding by pharmaceutical companies that market prescription stimulants[1]
  - 2016 Cochrane review on methylphenidate in adults, retracted for COI
  - 2008 Senate Investigation
- Patient/family advocacy groups receive funding from pharmaceutical companies[1]
- Panels responsible for widening definition of ADHD & allowing adult ADHD diagnosis[2]
  - Majority of members have ties to industry
- Substantial marketing dollars devoted to practicing physicians
  - 25% of all industry payments to pediatricians in 2014 were for 3 stimulant medications[3]
  - 1 in 18 physicians received marketing from stimulant pharmaceutical companies, most funds ($7B) for lisdexamfetamine, (2014-2018)[4]

1. Schwarz, ADHD Nation, 2016 (book)
2. Moynihan et al., PLOS Medicine, 2013
3. Parikh et al., Pediatrics, 2016
4. Hadland et al., JAMA Pediatrics, 2020

Cochrane Review, 2018: Amphetamines for Adults

- 19 RCTs using dextroamphetamine, lisdexamfetamine or mixed amphetamine salts
- 18 US studies, 10 multisite
- Mean study length: **5.3 weeks**, range 1-20 weeks
- All placebo-controlled, three also included an active comparator: guanfacine, modafinil or paroxetine
- 16 of 19 studies funded by pharma, 1 publicly funded (Levin 2015, SUD and ADHD), 2 did not disclose funding source

Cochrane Review, 2018: Amphetamines for Adults

- Participants: avg age 35, 57% male, mostly Caucasian, few studies included SUD
- Outcomes reviewed:
  - Severity of ADHD symptoms
  - Retention in treatment
  - Adverse events
- Results: **Low to very low-quality data**
  - Lack of blinding, attrition, selective reporting without *a priori* outline of outcomes, crossover without washout phase, short duration, baseline wellness (extreme validity problem)
  - Symptom severity: clinician rated change of 1-2/7 pts on CGI; 30% ADHD sx reduction on pt rated scales
  - No difference for amphetamine vs guanfacine, modafinil
  - No effect on retention
  - Adverse events: Increased AE-related withdrawals

Cochrane Reviews, 2021,22: Methylphenidate (IR & OROS)

- IR: 10 trials, 487 adults; OROS: 24 trials, 5066 adults
- Similar limitations: short duration (2-3mo), high risk of bias, AE poorly assessed
  - ***"Almost all have notable concerns related to sources of funding and conflicts of interest"***
  - Most did not include comorbid psychiatric conditions
  - **Very low-certainty evidence**
- For OROS: no effect on functional outcomes (missed days of work at 13wks) and small-mod effect on self-rated ADHD sxs
- For IR, included one direct comparison w/ lithium
  - No difference in MPH vs Li
  - Very low certainty of evidence for a difference compared with placebo on pt and provider rating scales

Evidence Review: Head-to-Head Comparisons

Population	Intervention	Primary Outcome	Notes
N=98, recruited from outpt psych, excluded SUD[1]	**Paroxetine** vs dexamphetamine (both up to 40mg/day) x20wks	**NS difference** in ADHD rating scale IV: Dex approx. 4pt (out of 56) lower, but p=0.06	35% lost to f/up (est 20% loss of power), industry funded
N=52, recruited from flyers at psych clinic in Taiwan, open label[2]	MPH 10 – 20 TID vs **atomoxetine** 0.5 – 1.2mg/kg/day, 8-10wks	**NS difference** in intraindividual variability in reaction time (reduced in both groups)	Mean daily dosages ~30mg MPH, 80mg atomoxetine
N=63, (same grp as above)[3]	MPH 10 – 20 TID vs **atomoxetine** 0.5 – 1.2mg/kg/day, 8-10wks	**NS differences** in ADHD scales, QOP and Weiss functional improvement scale	ADHD scales: self-report and clinician CGI
N=60 Korean pts on SSRI for MDD w/ only partial response, rater blinded[4]	OROS MPH vs **atomoxetine**, titrated to clinical response, 12wks	**NS differences** in ADHD self-report scale and CGI	Atomoxetine (~59mg M, ~80mg F), MPH (~56mg F, ~59mg M); ASRS and CGI

1. Weiss and Hechtman, J Clin Psychiatry, 2006
2. Ni et al., J of Psychopharmacology, 2016
3. Ni et al., J Atten Disord, 2017
4. Shim et al., Clin Psychopharm & Neurosci, 2022

Evidence Review: Functional Outcomes

- In observational studies in adults, stimulant rx associated with:
  - Decreased car accidents[1]
  - Decreased unemployment among women, not men[2]
- They DO NOT improve learning of material or GPA
  - Children randomized to MPH had markedly improved classroom behavior, but no improvement in learning[4]
  - Adherence → 0.11 pt improvement in GPA[5]
- They DO NOT substantially improve performance on neuropsychological testing
  - College students: RCT crossover mixed amphetamine salts vs placebo[6]

1. Chang et al., JAMA Psychiatry, 2017
2. Li et al., JAMA Network Open, 2022
3. Tardelli et al., Psychopharmacology, 2020
4. Pelham et al., Journal of Consulting & Clin Psychology, 2022
5. Marcus et al., J Am Acad CAP, 2011
6. Weyandt et al., Pharmacy, 2018

Harms of Stimulant Treatment for Adult ADHD

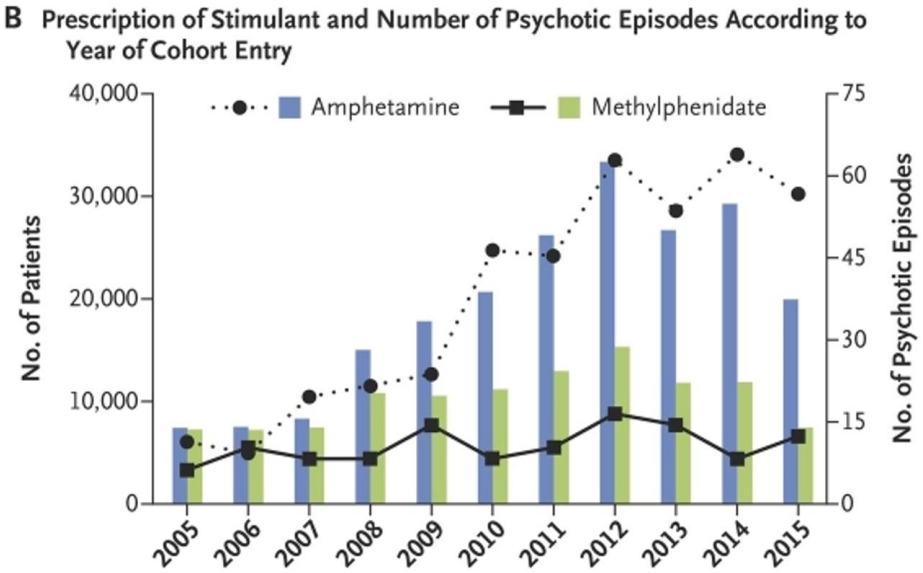
Harms: Cardiovascular Risk

- Stimulants increase blood pressure and heart rate
- Observational studies (individuals w/ pre-existing CV disease likely excluded):
  - Non-elderly adults, 25 – 64yrs[1]
    - No increased risk of serious CV events (stroke, MI, sudden cardiac arrest / death)
  - Elderly adults, >65yrs[2]
    - Increased risk of serious CV events (ventricular arrythmias, stroke)
    - Risk higher within first 30d of starting medication

1. Habel et al., JAMA, 2011
2. Tadrous et al., JAMA Network Open, 2021

Harms: Psychosis

Risk of new onset psychosis: amphetamines > methylphenidate[1]



Dose dependent increase in first episode psychosis/mania[2]

DEX Equivalents	Controls	Cases	Adj OR ±95% CI
None	2,538 (92.9%)	1,170 (87.7%)	Reference
Low: ≤15mg	96 (3.5%)	54 (4.1%)	**1.74** (1.13, 2.72)
Medium: 15-30mg	65 (2.4%)	61 (4.6%)	**3.54** (2.21, 5.66)
High: >30mg	34 (1.2%)	50 (3.8%)	**5.58** (3.21, 9.68)

1. Moran et al., NEJM, 2019
2. Moran et al., Am J Psychiatry, 2024

Harms: Misuse & Addiction

In US adults tx w/ stimulants, **25%** reported misuse, and **~10%** met criteria for StUD[1]

- 2019-2022, Data collected from all-payer pharmacy databases and NSDUH
- US adults aged 18 – 64yo
- Among those with prescription StUD, ~75%% solely used their own rx
- Compared to methylphenidate, ***amphetamine rx → 3x higher risk for misuse, 2x higher risk for StUD***
- **Risk factors**: never-married; <$75k/yr; depression; SI; nicotine dependence; alcohol, cannabis, cocaine, methamphetamine, or heroin use; prescription opioid or sedative misuse

Universal precautions to reduce stimulant misuse in treatment for adult ADHD[2]

- Accurate diagnosis and baseline assessment of RF for misuse
- Educate all patients of abuse potential, safe storage, PDMP review
- For high risk: Use delayed-release preparations, rx small quantities, pill counts, drug screening*
  - ***Many POC Utox may not distinguish between methamphetamine and amphetamine, requiring confirmatory panel to rule out presence of methamphetamine when prescribing amphetamines***

1. Han et al., JAMA Psychiatry, 2025
2. Modesto-Lowe et al., Cleveland Clinic J Medicine, 2015

Harms: Mortality / Overdose

Off-label prescribing in adults is rising, associated w/ increased all-cause mortality compared to on-label prescribing[1]

One observational study of people on BUP for OUD, prescribed stimulant therapy[2]

- Associated with:
  - 19% inc chance of non-fatal overdose
  - 36% increase in treatment retention
- Selection bias: only included pts w/ high adherence to stimulants

1. Westover et al., Addiction, 2018
2. Mintz et al., JAMA Network Open, 2022

Updated FDA Black Box Warning, 5/11/2023

To address continuing concerns of **misuse**, **addiction** and **overdose** of prescription stimulants, FDA is requiring updates to the Boxed Warning across the entire class

What should healthcare professionals do?

- ✓ Assess pts for risk of misuse, abuse and addiction before prescribing stimulants
- ✓ Counsel pts not to share prescribed stimulant with anyone
- ✓ Educate patients and families on serious risks, proper storage and proper disposal
- ✓ Regularly reassess and monitor for s/sx of non-medical use, addiction, and diversion

FDA updating warnings to improve safe use of prescription stimulants used to treat ADHD and other conditions | FDA

Stimulant Use Disorder

DSM-5 Criteria for SUD

≥2 items in 12mo period

1. Using more or longer than intended
2. Cannot cut down
3. ↑ time spent obtaining, using, recovering
4. Cravings
5. Failure to fulfill responsibilities
6. Social or interpersonal problems
7. Give up / reduce other important activities
8. Ongoing use in hazardous situations
9. Ongoing use despite known problems
10. Tolerance
11. Withdrawal

Specifiers:

***Mild**: 2-3 criteria*

***Moderate**: 4-5 criteria*

***Severe**: ≥6 criteria*

- ❑ *In early remission: no crit ≥3mo**
- ❑ *In sustained remission: no crit ≥12mo**
- ❑ *On maintenance therapy*
- ❑ *In a controlled environment*

*w/ exception of cravings

Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2022.

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11. Withdrawal

Loss of Control

Specifiers:

***Mild**: 2-3 criteria*

***Moderate**: 4-5 criteria*

***Severe**: ≥6 criteria*

- ❑ *In early remission: no crit ≥3mo**
- ❑ *In sustained remission: no crit ≥12mo**
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Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2022.

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9. Ongoing use despite known problems
10. Tolerance
11. Withdrawal

Social Impairment

Specifiers:

***Mild**: 2-3 criteria*

***Moderate**: 4-5 criteria*

***Severe**: ≥6 criteria*

- ❑ *In early remission: no crit ≥3mo**
- ❑ *In sustained remission: no crit ≥12mo**
- ❑ *On maintenance therapy*
- ❑ *In a controlled environment*

*w/ exception of cravings

Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2022.

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4. Cravings
5. Failure to fulfill responsibilities
6. Social or interpersonal problems
7. Give up / reduce other important activities
8. Ongoing use in hazardous situations
9. Ongoing use despite known problems
10. Tolerance
11. Withdrawal

Risky Use

Specifiers:

***Mild**: 2-3 criteria*

***Moderate**: 4-5 criteria*

***Severe**: ≥6 criteria*

- ❑ *In early remission: no crit ≥3mo**
- ❑ *In sustained remission: no crit ≥12mo**
- ❑ *On maintenance therapy*
- ❑ *In a controlled environment*

*w/ exception of cravings

Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2022.

DSM-5 Criteria for SUD

≥2 items in 12mo period

1. Using more or longer than intended
2. Cannot cut down
3. ↑ time spent obtaining, using, recovering
4. Cravings
5. Failure to fulfill responsibilities
6. Social or interpersonal problems
7. Give up / reduce other important activities
8. Ongoing use in hazardous situations
9. Ongoing use despite known problems
10. Tolerance
11. Withdrawal

Physiologic Dependence*

Specifiers:

***Mild**: 2-3 criteria*

***Moderate**: 4-5 criteria*

***Severe**: ≥6 criteria*

- ❑ *In early remission: no crit ≥3mo**
- ❑ *In sustained remission: no crit ≥12mo**
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*w/ exception of cravings

Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision. Washington, DC, American Psychiatric Association, 2022.

Trends in StUDs

Dramatic, disproportionate increases in mortality relative to use[1]

- Between 2015-2019, methamphetamine use **↑43%**, overdose deaths **↑180%**
- Reflects riskier consumption patterns
  - Increased injection use
  - Co-use with opioids (particularly fentanyl-contaminated supplies)
  - Higher frequency of use
- By 2021, **50% of all US overdose deaths involved stimulants**[2]

Significant demographic disparities persist in stimulant-associated fatalities

- From 2009-2018, cocaine-associated death rate among non-Hispanic Black individuals was nearly double that of non-Hispanic White individuals[3]

1. Han et al., JAMA Psychiatry, 2021
2. Batki et al., AAAP Guideline, 2023
3. Das, Kutscher, JAMA Health Forum, 2020

ASAM/AAAP Treatment Guideline, 2024

Behavioral Treatment: **Contingency management** (CM) has demonstrated the best effectiveness and represents the current standard of care *(H,S)*

- Additional interventions to be considered alongside CM: Community Reinforcement Approach, CBT, Matrix Model

Pharmacotherapy for Amphetamine-type StUD:

- Non-psychostimulant medication
  - Bupropion, bupropion & naltrexone, topiramate, mirtazapine *(L-M,C)*
- Psychostimulant medication
  - ***Only for board-certified addiction medicine specialists w/ "commensurate training, competencies and capacity for close patient monitoring… including pill counts, drug testing, frequent clinical contact and frequent PDMP checks"***
  - "Can consider prescribing a long-acting methylphenidate formulation to promote reduced use of amphetamine type stimulants" *(L,C)*

The ASAM/AAAP Clinical Practice Guideline on the Management of Stimulant Use Disorder. J of Addiction Medicine. 2024.

ASAM/AAAP Treatment Guideline, 2024

Concurrent Management of StUD and ADHD

- Clinicians should address ADHD symptoms as part of the treatment of StUD
  - Consider stimulants for ADHD when benefits outweigh the risks *(L,S)*
  - Prescribe non-stimulant medications for ADHD when benefits of stimulants do not outweigh the risks *(L,S)*
    - Atomoxetine, bupropion, guanfacine, clonidine, venlafaxine
  - Encourage behavioral approaches *(L,S)*

- When prescribing psychostimulants for co-occurring ADHD and StUD
  - Use extended-released formulations *(CC,S)*
  - Maintain a level of monitoring commensurate with the risk profile for the given medication and patient *(CC,S)*
    - Pill counts, drug testing, more frequent clinical contact, more frequent PDMP checks

The ASAM/AAAP Clinical Practice Guideline on the Management of Stimulant Use Disorder. J of Addiction Medicine. 2024.

Wrap Up

Key Takeaways

- Adult ADHD carries significant morbidity, with higher prevalence among people w/ SUD
- Diagnosing adult ADHD is complex and time consuming
- The evidence for benefit of treatment with stimulants consists of numerous low-quality studies without functional outcomes
  - **Risk of non-stimulant treatment is lower – and benefit may be comparable to stimulants in terms of functional benefit**
- Risks associated with stimulant treatment include misuse, addiction, psychosis, and CV events
  - **Risk may be mitigated by universal precautions, including careful diagnosis and monitoring**

Questions?

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