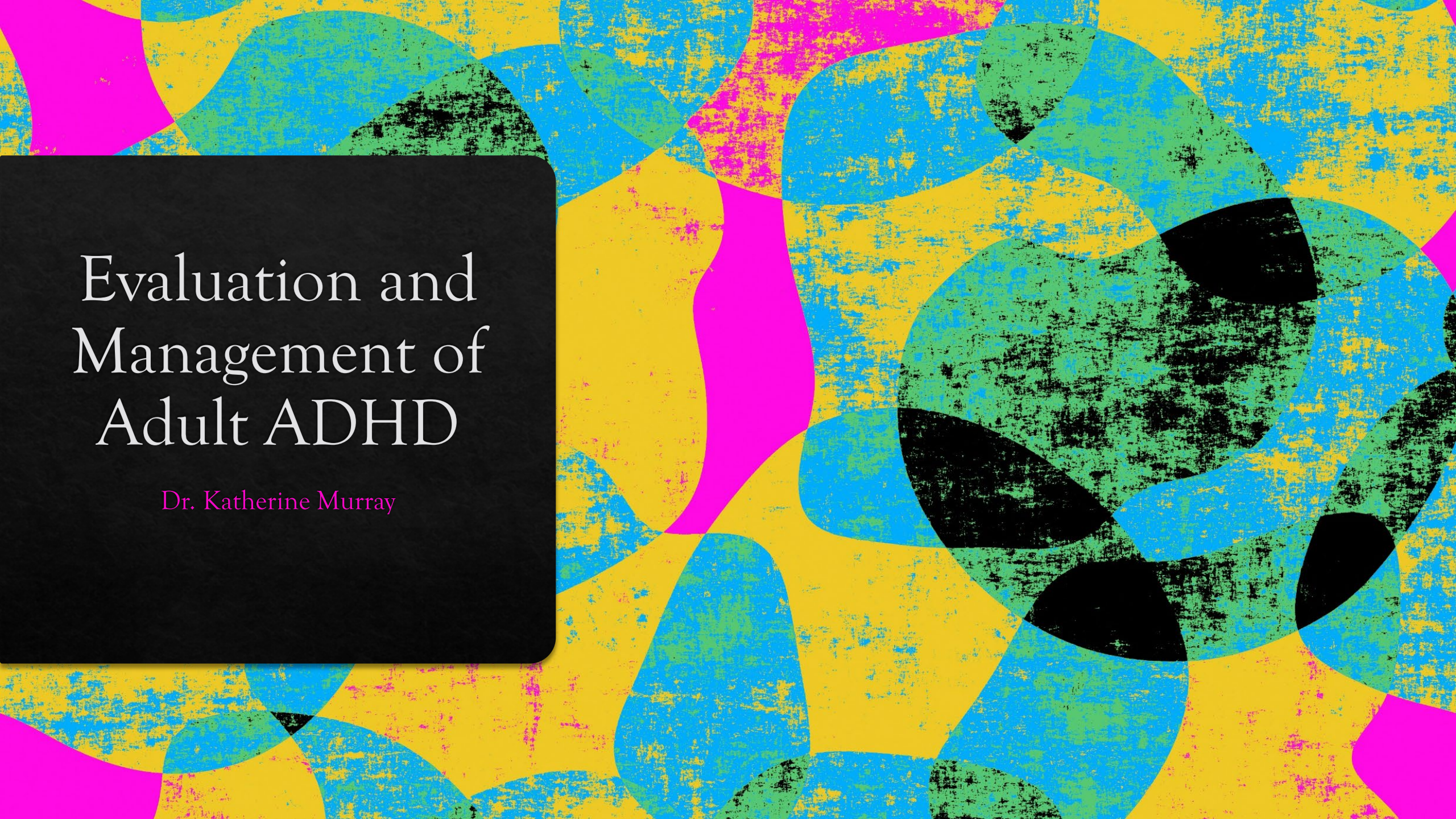
Evaluation and Management of Adult ADHD

Dr. Katherine Murray



Objectives

- Providers will be able to apply relevant DSM-V diagnostic criteria to adult patients
- Providers will be able to conduct a thorough diagnostic interview and workup for adult ADHD
- Providers will be knowledgeable regarding treatment options for adult ADHD, including both stimulant and non-stimulant medication options and therapy

Disclosures

- No financial or other relationships to disclose
- Special thanks to:
  - Dr. Timothy Wilens and his presentation on ADHD in adults from the 2022 Montana Psychiatric Conference
  - Dr. Leonard Adler and his presentation on ADHD throughout the lifetime presented during the 2024 APA conference

ADHD Overview

- ADHD prevalence among 8- to 15-year-olds: 8.7%
- ADHD prevalence among 18- to 44-year-olds: 4.4%
- Associated with chronic course
  - Circa 75% persistence from childhood into adolescence
  - Circa 50% persistence from childhood into adulthood

Froehlich TE, et al. *Arch Pediatr Adolesc Med*. 2007;161(9):857-864. Kessler RC, et al. *Am J Psychiatry*. 2006;163(4):716-723. Wilens TE, et al. *Postgrad Med*. 2010;122(5):97-109; Faraone et al, *Nature Neuroscience*, 2015; 2021 International Consensus Statement on ADHD

Variable Patterns of Remission From ADHD in the Multimodal Treatment Study of ADHD

Margaret H. Sibley, Ph.D., L. Eugene Arnold, M.D., James M. Swanson, Ph.D., Lily T. Hechtman, M.D., Traci M. Kennedy, Ph.D., Elizabeth Owens, Ph.D., Brooke S.G. Molina, Ph.D., Peter S. Jensen, M.D., Stephen P. Hinshaw, Ph.D., Arunima Roy, Ph.D., Andrea Chronis-Tuscano, Ph.D., Jeffrey H. Newcorn, M.D., Luis A. Rohde, M.D., Ph.D., for the MTA Cooperative Group

Objective: It is estimated that childhood attention deficit hyperactivity disorder (ADHD) remits by adulthood in approximately 50% of cases; however, this conclusion is typically based on single endpoints, failing to consider longitudinal patterns of ADHD expression. The authors investigated the extent to which children with ADHD experience recovery and variable patterns of remission by adulthood.

Methods: Children with ADHD (N=558) in the Multimodal Treatment Study of ADHD (MTA) underwent eight assessments over follow-ups ranging from 2 years (mean age, 10.44 years) to 16 years (mean age, 25.12 years) after baseline. The authors identified participants with fully remitted, partially remitted, and persistent ADHD at each time point on the basis of parent, teacher, and self-reports of ADHD symptoms and impairment, treatment utilization, and substance use and mental disorders. Longitudinal patterns of remission and persistence were identified that considered context and timing.

Results: Approximately 30% of children with ADHD experienced full remission at some point during the follow-up period; however, a majority of them (60%) experienced recurrence of ADHD after the initial period of remission. Only 9.1% of the sample demonstrated recovery (sustained remission) by study endpoint, and only 10.8% demonstrated stable ADHD persistence across study time points. Most participants with ADHD (63.8%) had fluctuating periods of remission and recurrence over time.

Conclusions: The MTA findings challenge the notion that approximately 50% of children with ADHD outgrow the disorder by adulthood. Most cases demonstrated fluctuating symptoms between childhood and young adulthood. Although intermittent periods of remission can be expected in most cases, 90% of children with ADHD in MTA continued to experience residual symptoms into young adulthood.

Am J Psychiatry 2022; 179:142–151; doi: 10.1176/appi.ajp.2021.21010032

DSM-V Criteria for ADHD

Must observe 6/9 symptoms in patients ≤ 16 years, 5/9 for ≥ 17 years)

Inattention

- Often:
  - Fails to give close attention to details
  - Has difficulty sustaining attention
  - Does not seem to listen
  - Does not follow through on instructions
  - Has difficulty organizing tasks or activities
  - Avoids tasks requiring sustained mental effort
  - Frequently shifts activities
  - Loses things easily
  - Easily distracted and forgetful

Hyperactivity

- Often:
  - Fidgets with hands and/or feet
  - Unable to stay seated or sit calmly for extended periods of time
  - Feeling internal restlessness
  - “On the go”
  - Excessive talking, blurts out answers
  - Impatient
  - Interrupts or intrudes

DSM-5 Criteria for ADHD Diagnosis

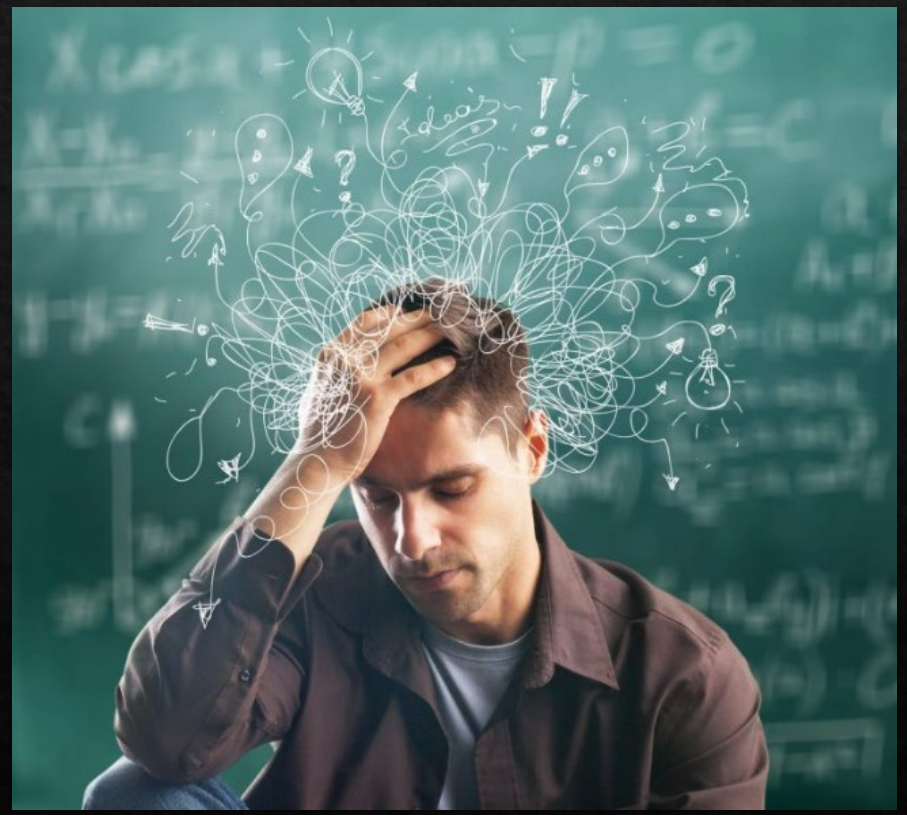
- Age of onset ≤ 12 years
- Adults must have at least 5/9 symptoms of inattention, hyperactivity, or a combination of the two
- Symptoms/behaviors are persistent for ≥ 6 months
- Symptoms/behaviors are present in ≥ 2 settings (school, work, home)
- Symptoms/behaviors have negatively impacted academic, professional, and/or social functioning
- Symptoms cannot be attributed to another psychiatric disorder, medical condition, or substance use
- Diagnosis is clinically derived based on interview and does not require neuropsychological testing
  - Neuropsychological testing can be helpful if you are concerned about a specific learning disorder

DSM-V ADHD Criteria Changes

- Age of onset criteria has been increased from 7 to 12 years of age
- Reducing the number of required symptoms in both the IA and H-I group from six to five for individuals 17 or older,
- Removal of comorbid autism spectrum disorders as an exclusion criteria
- Specifying that several symptoms must be present before the age of 12 and that several symptoms must occur in two or more settings
- Requiring several symptoms in each setting (school/work, home or social)
- Replacing the term “sub-type” with “presentation”
- Add examples to each symptom domain to improve the application of the symptoms across the lifespan

ADHD Prevalence

- ADHD subtypes in adults:
  - Combined subtype (70%)
  - Inattentive (25%)
  - Hyperactive-impulsive (< 5%)
- Male-to-female ratio is higher in children compared to adults (1:1)
- Females are over-represented in inattentive subtype
- Prevalence is similar across cultures



Goldman et al. *JAMA.* 1998;279:1100-1107. Barkley RA. Attention-deficit hyperactivity disorder. In: Mash EJ, Barkley RA, eds. *Child Psychopathology*. 1996:63-112.; Faraone et al. 2003

Adult ADHD Instruments: Diagnostic

Scale	Scale available from:
Conners Adult ADHD Diagnostic Interview	***Multi Health Systems, Inc.***
Barkley Current Symptoms Scale (with supplemental Barkley scales)	***Barkley RA, Murphy KR. Attention-Deficit Hyperactivity Disorder: A Clinical Workbook. 2nd ed.***
Brown ADD Scale Diagnostic Form	***The Psychological Corporation***
Kiddie-SADS Diagnostic Interview ADHD Module	***www.wpic.pitt.edu/ksads***
Adult ADHD Clinician Diagnostic Scale (ACDS v1.2)	***Lenard Adler, MD Adult ADHD Program NYU School of Medicine adultADHD@med.nyu.edu***

Adult ADHD Instruments: Symptom Assessment

Scale	Scale available from:
Brown ADD Scale	***The Psychological Corporation***
Conners' Adult ADHD Rating Scale	***Multi Health Systems, Inc.***
Wender-Reimherr Adult Attention Deficit Disorder Scale	***Fred W. Reimherr, MD, Mood Disorders Clinic, Department of Psychiatry, University of Utah Health Science Center, Salt Lake City, Utah***
ADHD Rating Scale	***Guilford Press***
Barkley's Current Symptoms Scale	***Barkley RA, Murphy KR. Attention-Deficit Hyperactivity Disorder: A Clinical Workbook. Second Edition.***
Adult Self-Report Scale v1.1 (18-item symptom assessment and screener)	***www.med.nyu.edu/Psych/training/adhd.html and the WHO website***
Adult Investigator Symptom Report Scale (AISRS)	***Lenard Adler, MD, Adult ADHD Program NYU School of Medicine adultADHD@med.nyu.edu***

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

Other features of adult ADHD that are not included in the DSM-V diagnostic criteria...

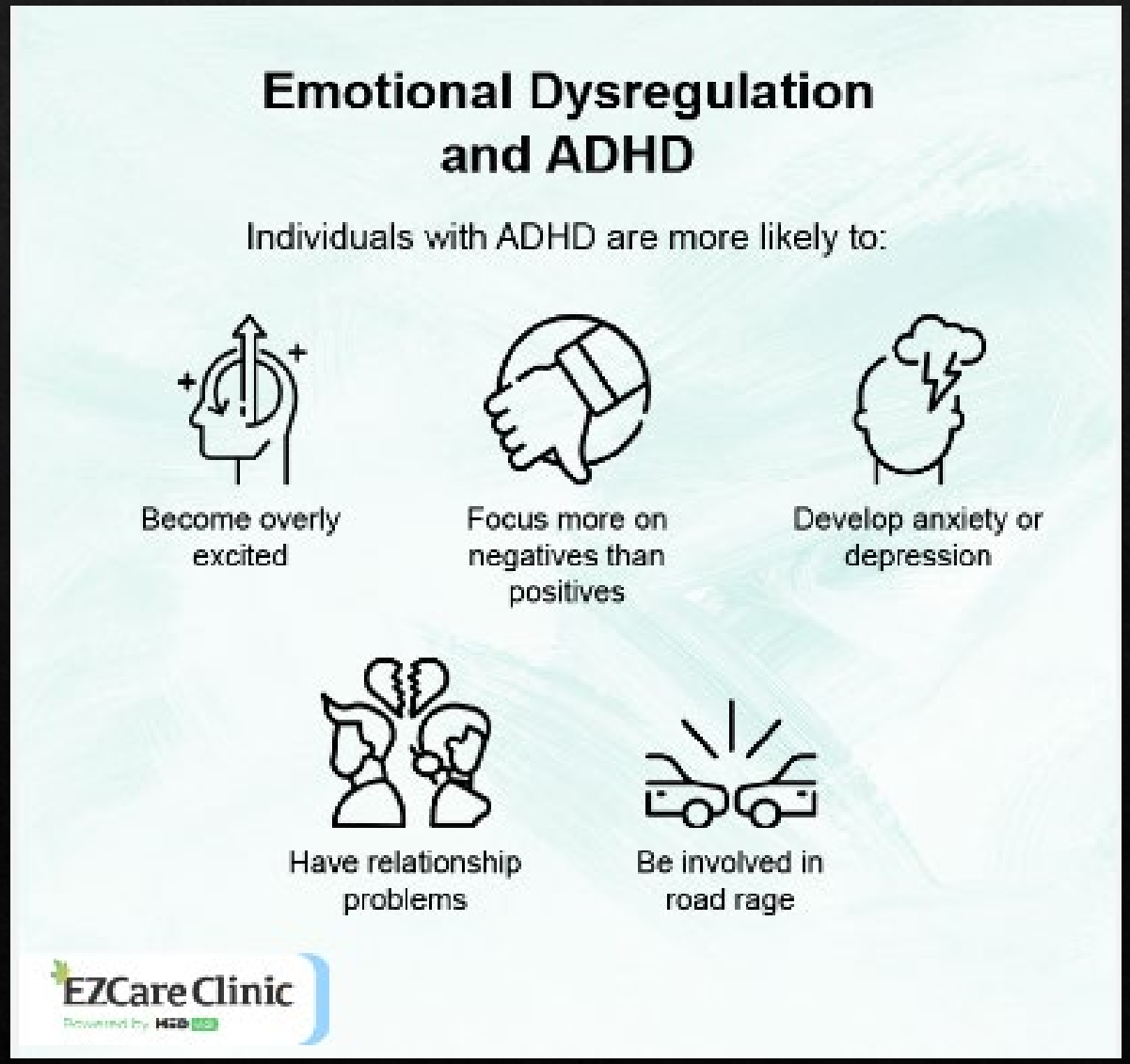
Executive Function Deficits (EFD)

- Response Inhibitions
  - Impulsive responding
  - Distractibility/poor interference control
  - Difficulty interrupting pleasurable activities
- Non-verbal Working Memory
  - Impaired time management
  - Reduced sensitivity to performance errors
  - Reduced self-awareness
- Verbal Working Memory
  - Difficulty following instructions from others
  - Difficulties with self-instruction
  - Reduced reading comprehension
- Self-Regulation of Emotion and Motivation
  - More impulsive emotional displays
  - Poor self-motivation, willpower, and persistence toward future goals
- Planning and Problem-Solving
  - Difficulty organizing and expressing thoughts efficiently and effectively
  - Less able to generate diversity of options on demand (verbal and non-verbal)

R. Barkley. ADHD and the Nature of Self-Control, 2005

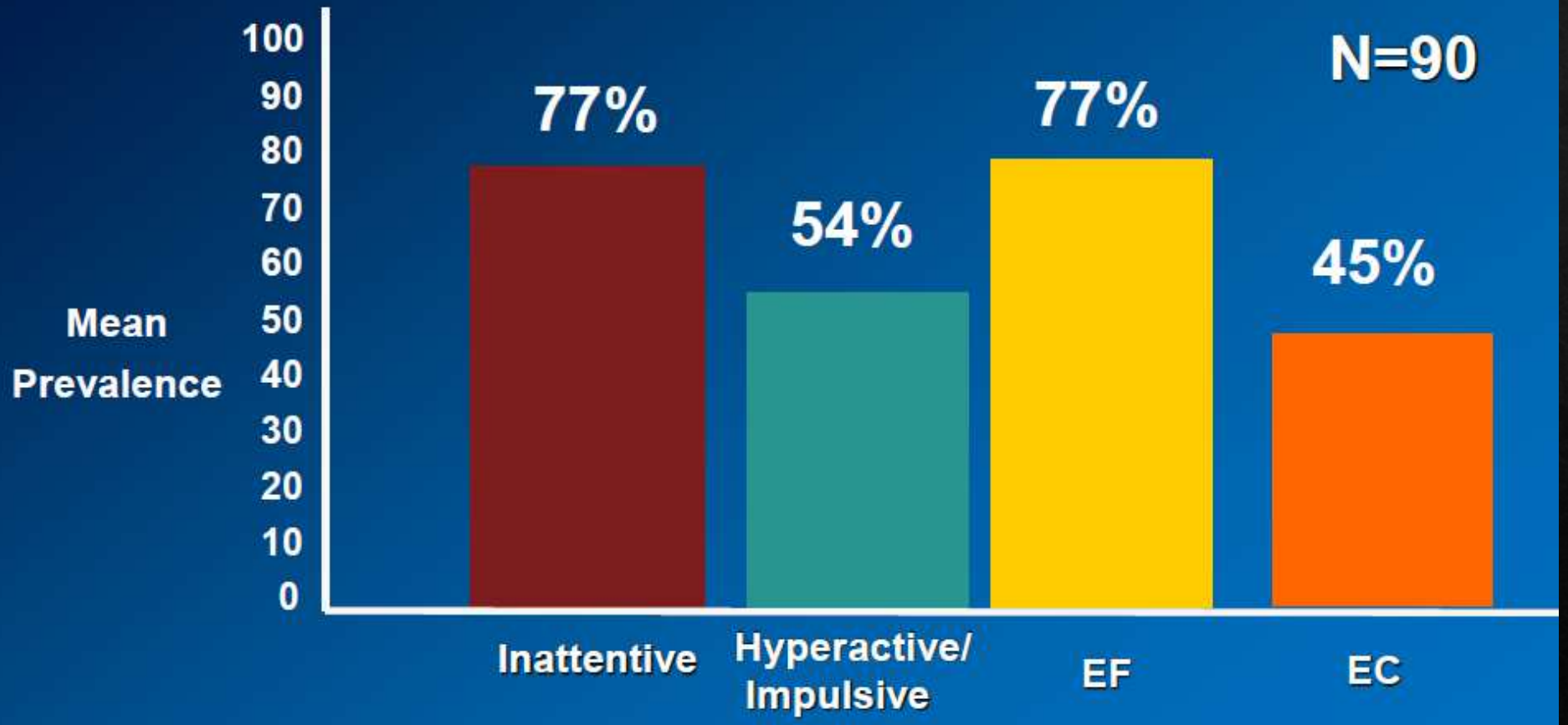
Emotional Dysregulation (ED)

- Includes rapidly shifting affective disturbance, impulsivity, mood lability, and emotional over-reactivity
- Rating Scales to help define ED Symptoms:
  - BRIEF
  - Brown
  - Barkley
  - Expanded AISRS, ACDS, or ASRS



Barkley RA, Fischer M 2010, Barkley RA, Murphy KR 2010, Wender PH 1995.

Inattention Drives Presentation of ADHD in Adults: Community Based and Managed Care Samples



Kessler RC, Adler LA et al. *Arch Gen Psych* 2010

EF = Executive Function, EC = Emotional Control

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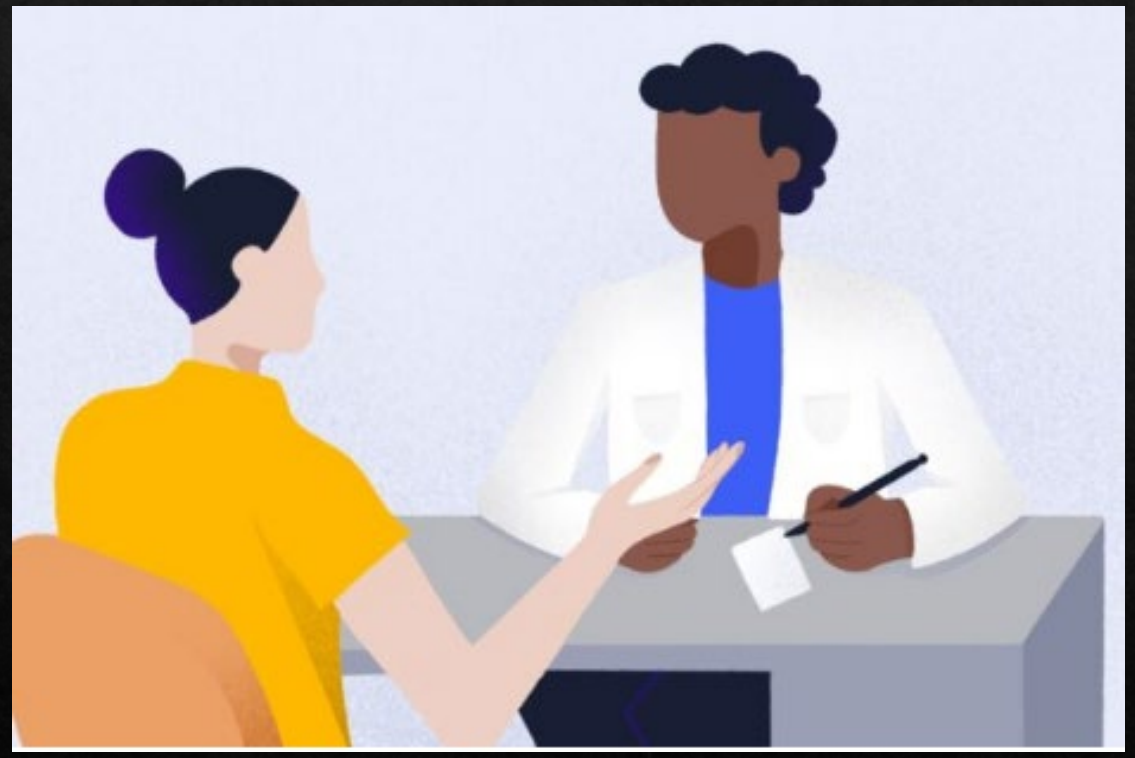
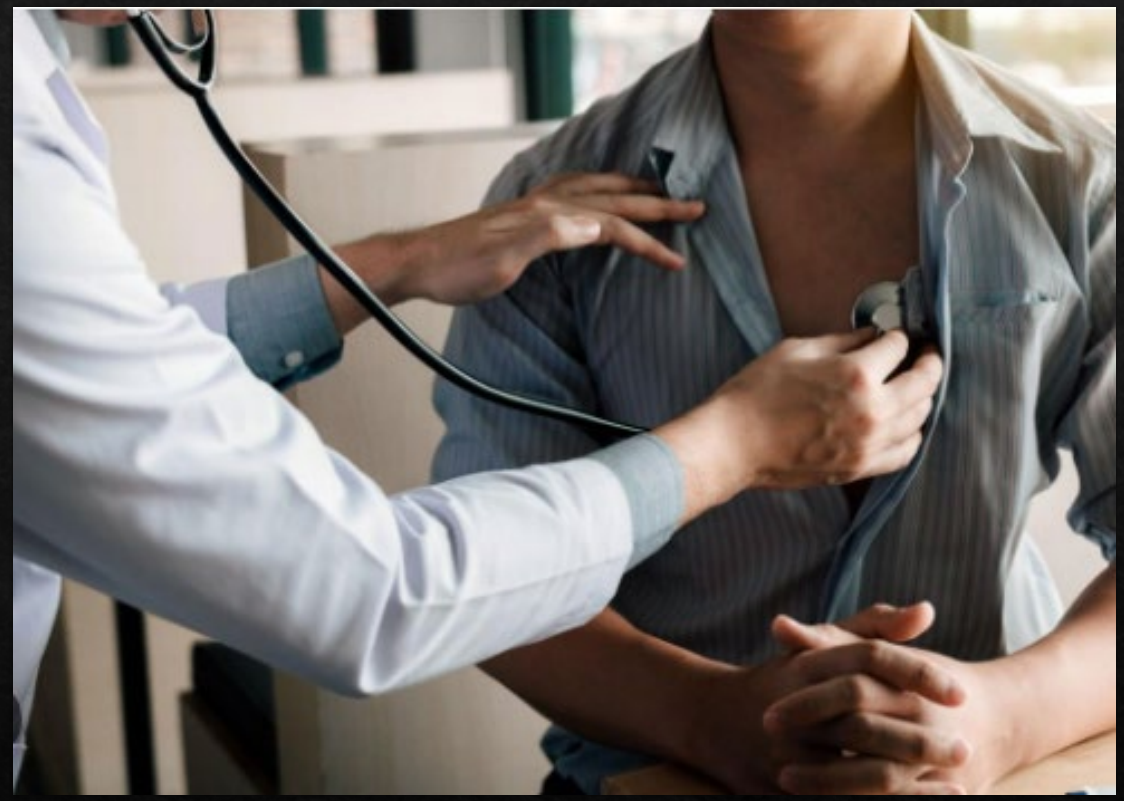
Diagnostic Interview for Adult ADHD



- Life history:
  - If possible, try to obtain collateral information from spouse, family, etc
  - If possible, ask to see old report cards, work performance reviews, etc
  - Try to avoid targeted questions, ask for specific examples
- Rating Scales
- Mental Status Exam
- Review of Medical History
  - If medical history is unremarkable, neurological testing is not indicated
  - Assess for comorbidities (psychiatric, cognitive, medical, psychosocial)

Medical History of ADHD Assessment

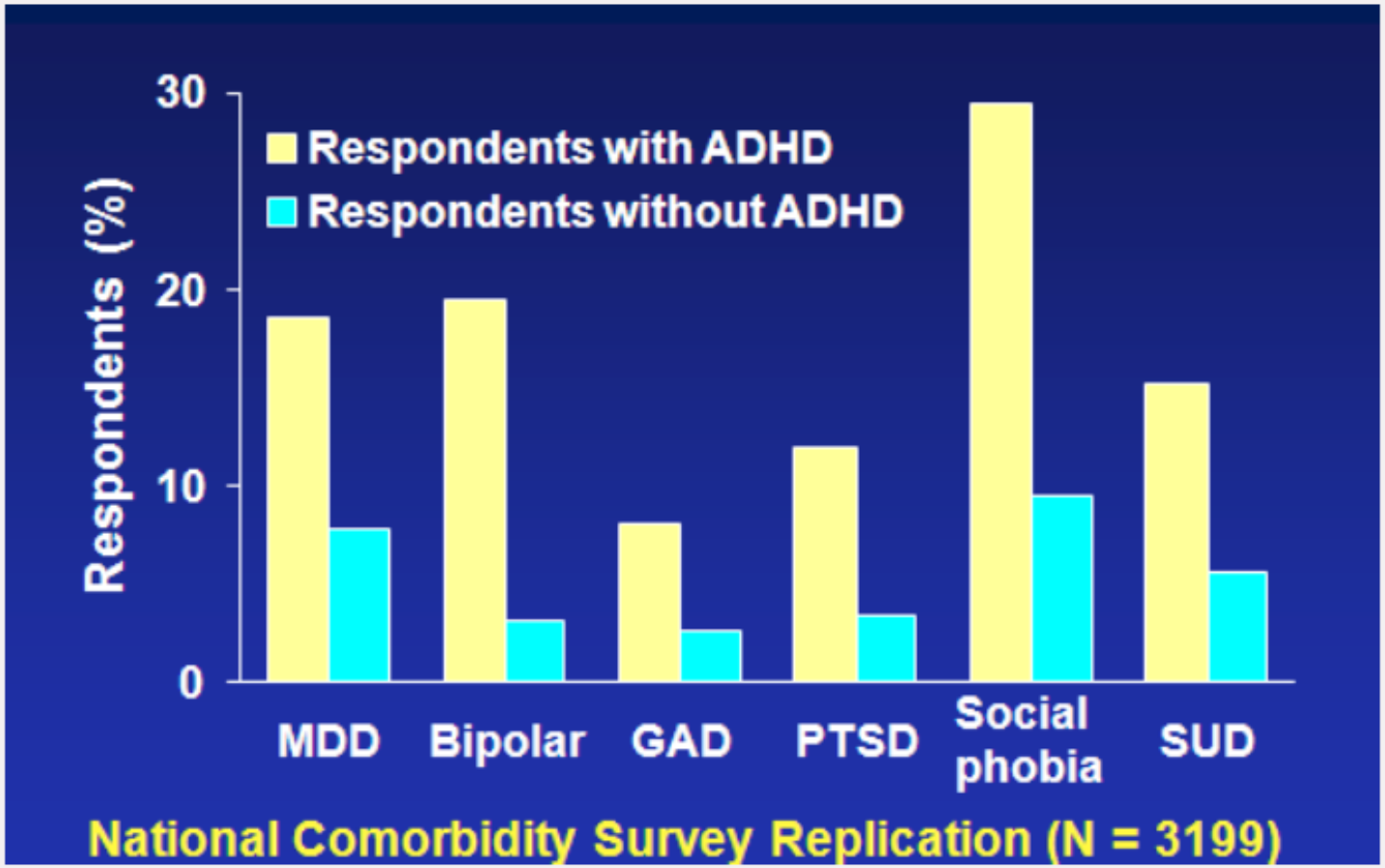
- Personal history of congenital or acquired cardiac disease?
- Any history of palpitations, chest pain, syncope, post-exercise symptoms, HTN?
- Any family history or premature cardiac disease (< 40 years of age)?
- Any history of neurological issues, TBIs, seizures, meningitis, etc?
- If there is any suspicion of cardiovascular or neurological issue, then further workup is indicated
- Any history of severe illnesses, prolonged hospitalizations, COVID, etc?
- Medication review (including prescribed and OTC)
- Substance use history (consider getting urine drug screen)



Evaluation of ADHD in adults is complex...

- Core symptoms of ADHD are present in all individuals to some extent making individual level of impairment very important
- Comorbidity is common–Are symptoms from ADHD or comorbid disorder?
- Longitudinal history is critical
- Impairment in 2 realms of life can be relative and difficult to determine, especially for the high-functioning patient
- Retrospective recall of childhood symptoms

Comorbid psychiatric conditions are common in adults with ADHD

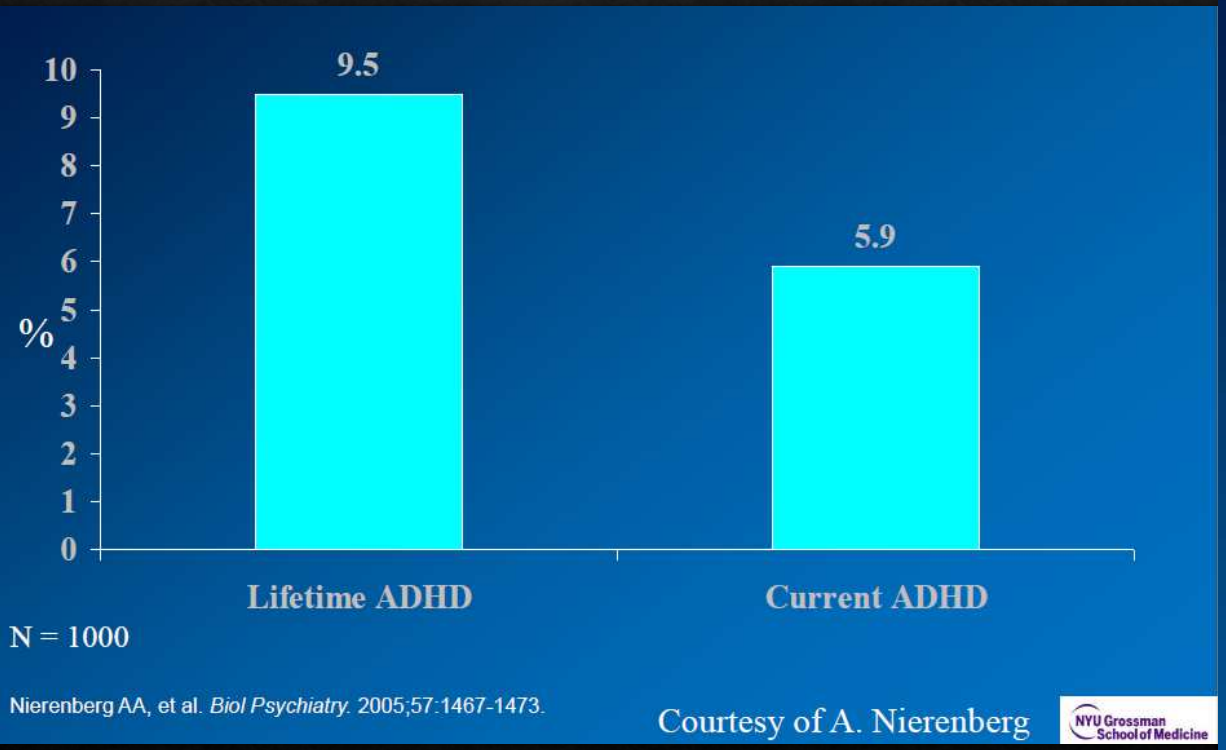


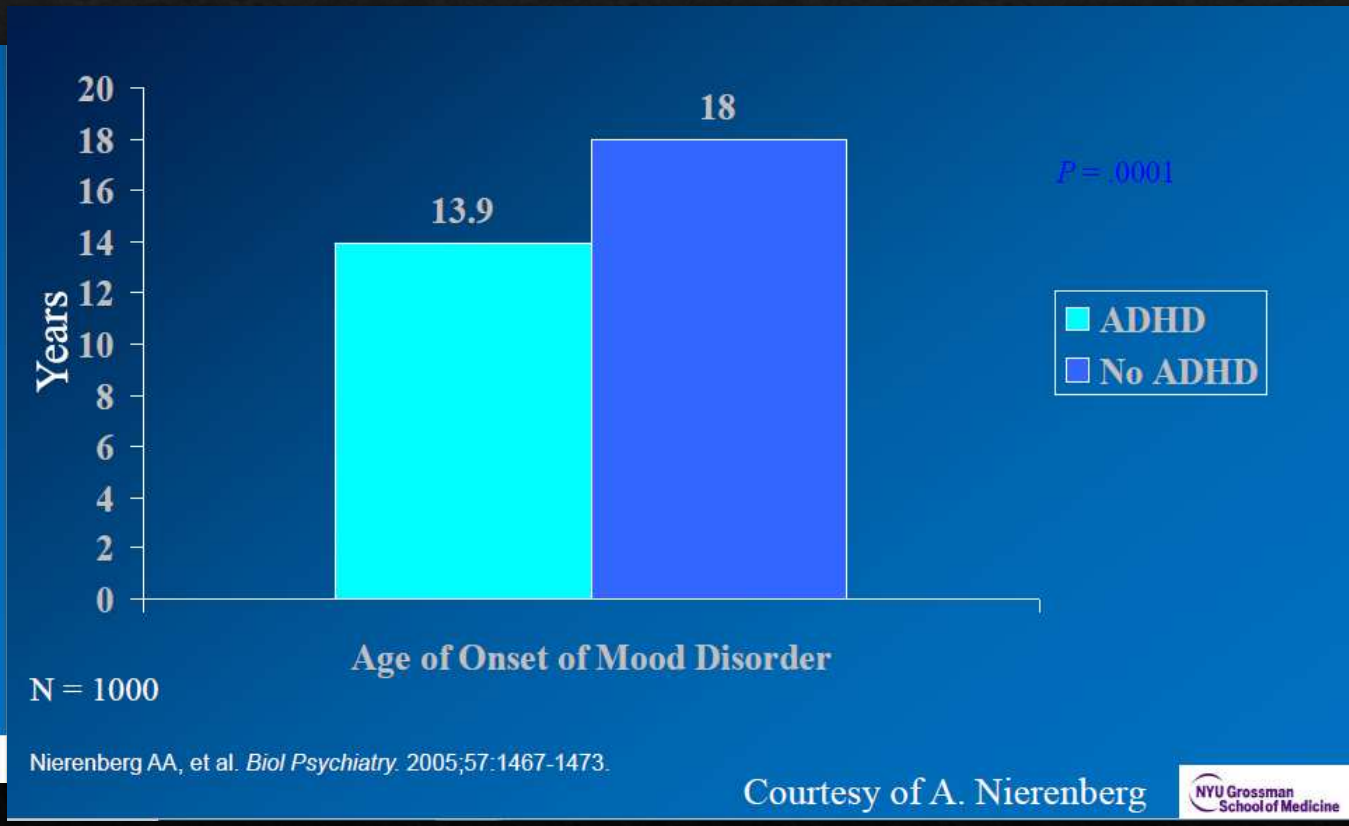
Kessler RC et al. *Am J Psychiatry*. 2006;163(4):716-723.

Among respondents aged 18-44 years with ADHD, comorbid disorder within previous 12 months

For all comparisons, $P < 0.05$

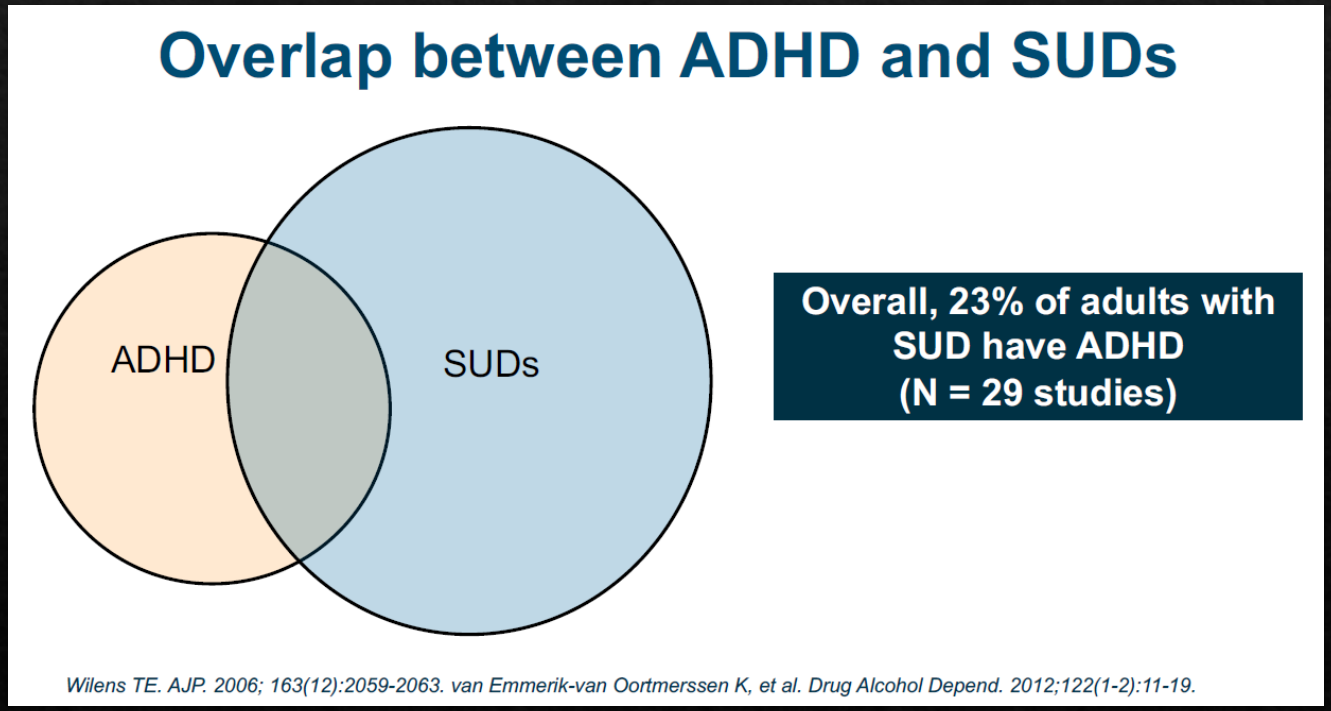
Comorbidity with Bipolar Disorder





ADHD and Substance Use Disorders

- Young adults with ADHD had earlier onset of nicotine dependence and other SUD
- Meta-analyses generally indicate that appropriate treatment for ADHD lowers risk of SUD in individuals with ADHD
- Greatest risk of misuse and diversion at:
  - Competitive schools
  - Patients with conduct disorder
  - More common in patient using IR formulations, particularly amphetamine salts



Strategies for ADHD and SUD

Table 2
Recommendations for treating ADHD in SUD

Treatment Point	Recommendation
Assessment	ADHD screening should be part of standard clinical care in SUD. Nicotine and SUD and behavioral addictions should be part of standard clinical care in ADHD.
Diagnosis	If new diagnosis of ADHD, if possible, maintain a period of abstinence/low SUD use before diagnosing ADHD in SUD.
Treatment	Treat both conditions simultaneously. With more severe SUD, one may need to address SUD before ADHD treatment. Initiate ADHD treatment as soon as possible. Consider CBT, nonstimulants, or extended-release stimulants in higher-risk groups
Stimulant diversion/misuse	Use of nonstimulants, extended-release, and prodrug stimulants. Avoid immediate-release stimulants Educate and monitor closely

Taubin, Wilson and Wilens, ADHD and SUD in Young People, Child Adolesc Psych Clin N America, 2022;32:515-530

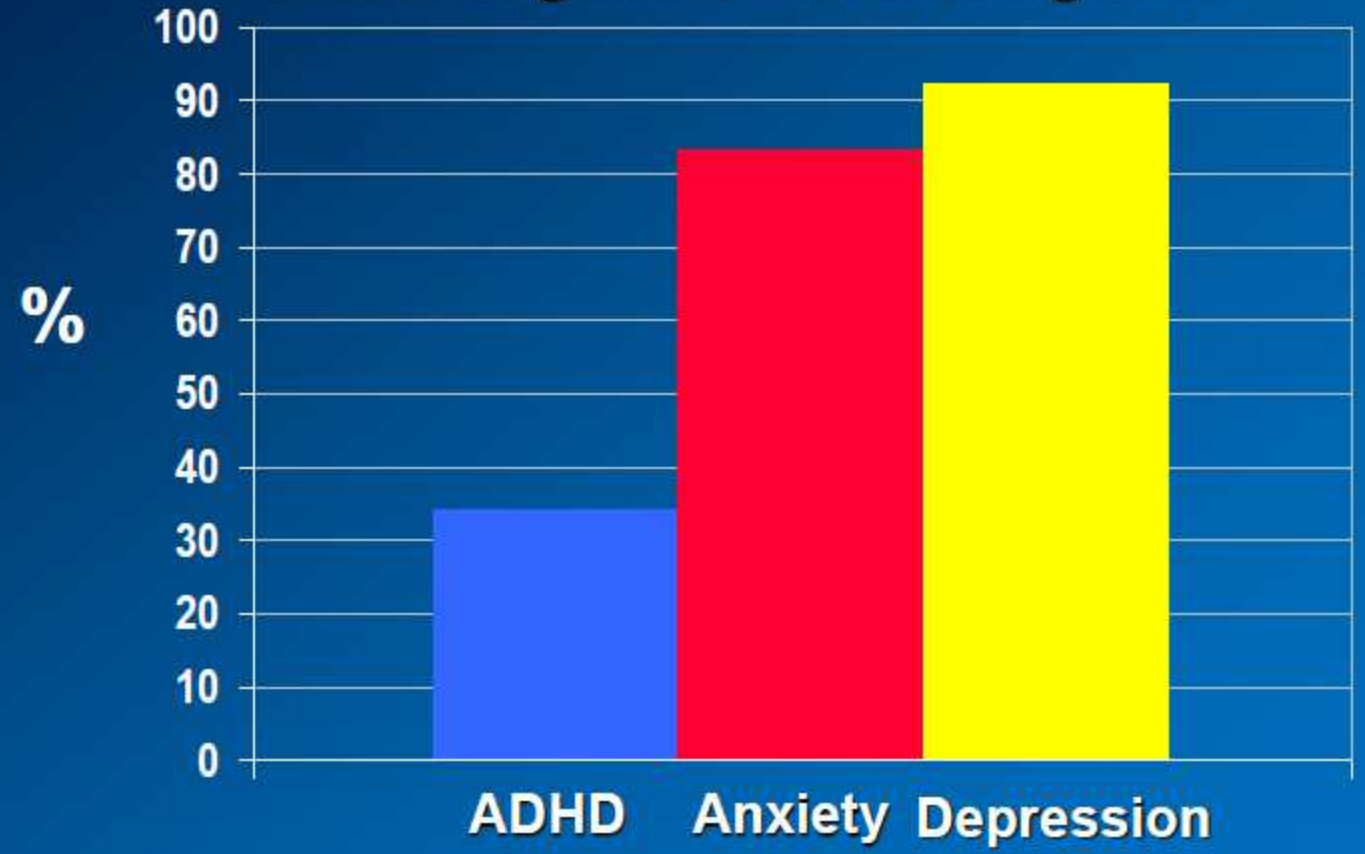
Physician Perceptions of Adult ADHD

- Survey of 400 PCPs
  - Conducted online in May 2003 by Harris Interactive
  - Conducted for New York University School of Medicine
  - Supported in part by Eli Lilly
- Target Physicians
  - Recruitment through AMA master file
  - Family practice, general practice, or internal medicine
  - Practicing for ≥2 years
  - Treating ≥30 patients/week with any combination of ADHD, BPD, depression, GAD, or OCD

Adler LA Presented at CINP, Chicago Ill., 2006

Confidence with Psychiatric Diagnoses

Percentage of PCPs who felt "very" or "extremely" knowledgeable about diagnosis



Adler LA Presented at CINP, Chicago Ill., 2006

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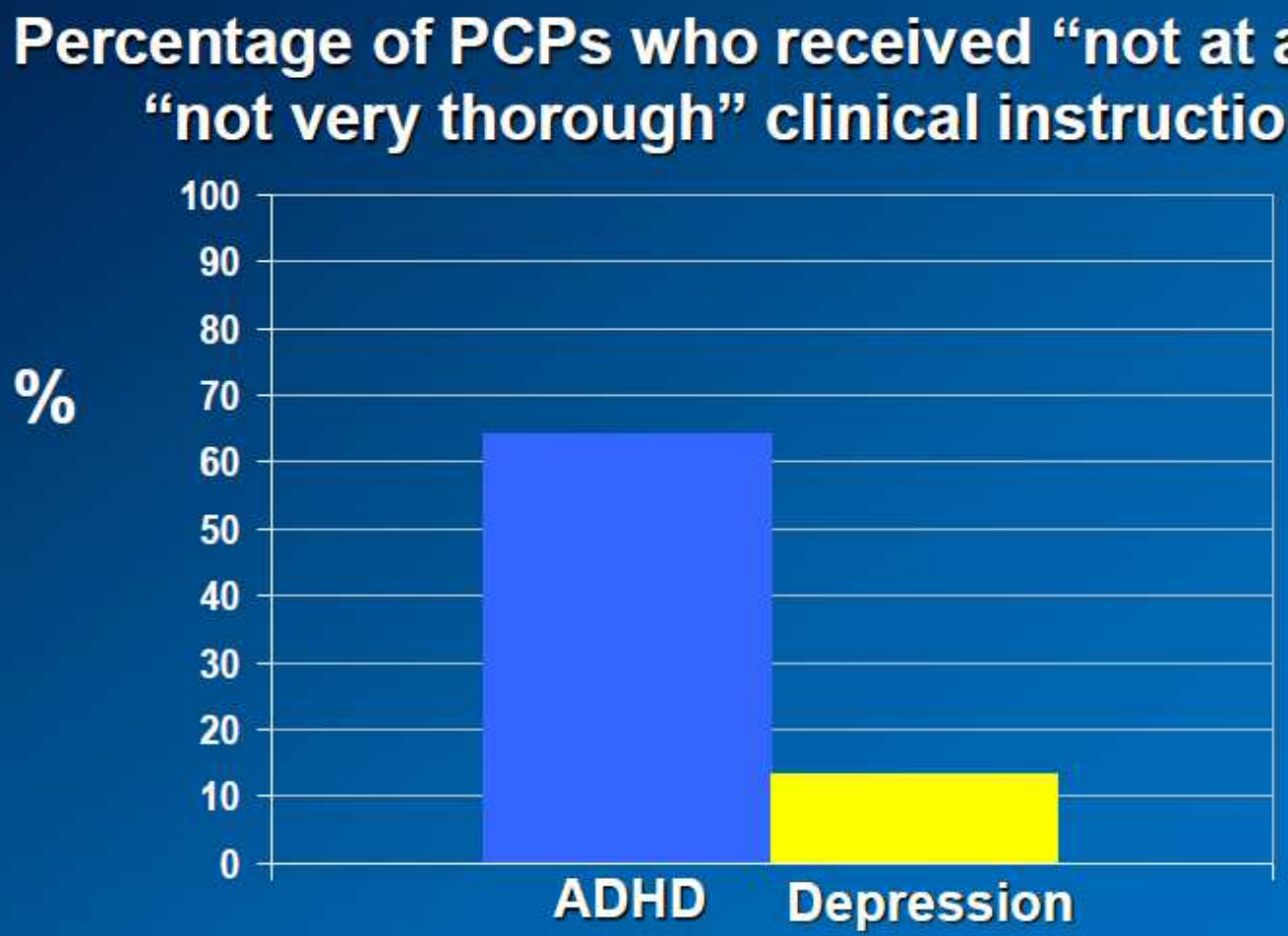
Level of Clinical Instruction for Psychiatric Diagnoses and Treatment



Adler LA Presented at CINP, Chicago Ill., 2006

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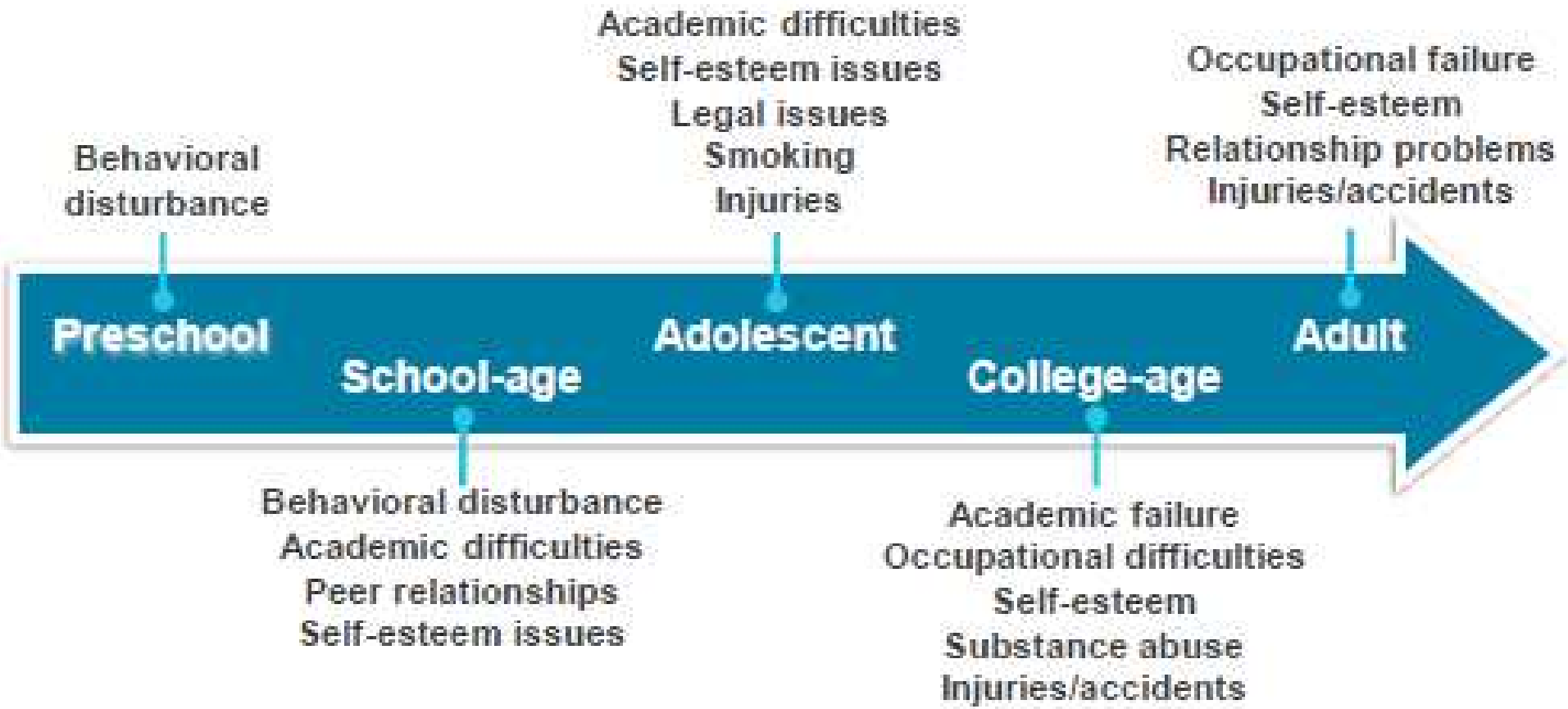
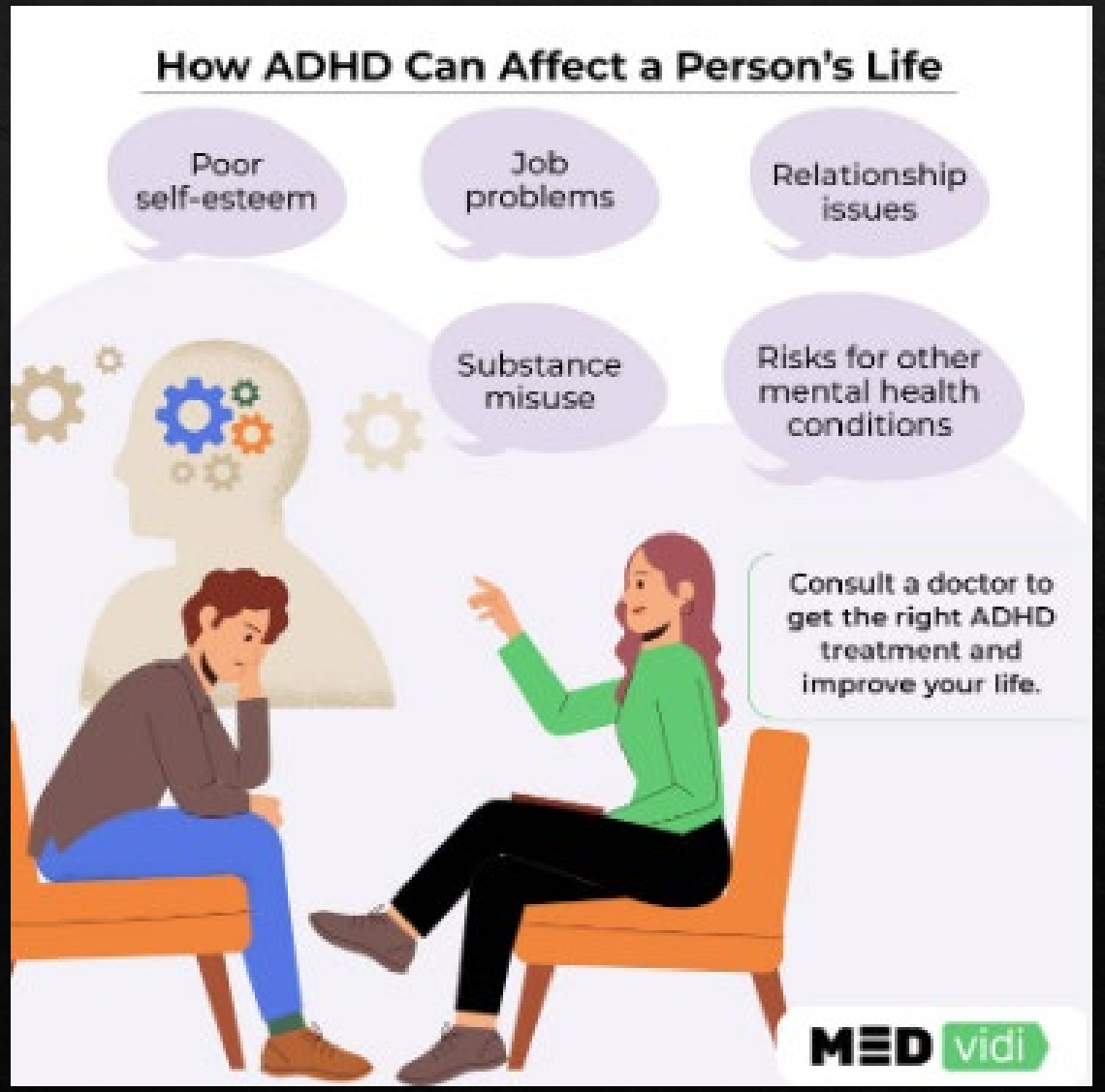
Developmental Impact of Untreated ADHD



Pliszka S; AACAP Work Group on Quality Issues. *J Am Acad Child Adolesc Psychiatry*. 2007;46(7):894-921.. Adler, Spencer, Wilens ADHD in Children and Adults, 2015, Cambridge Press

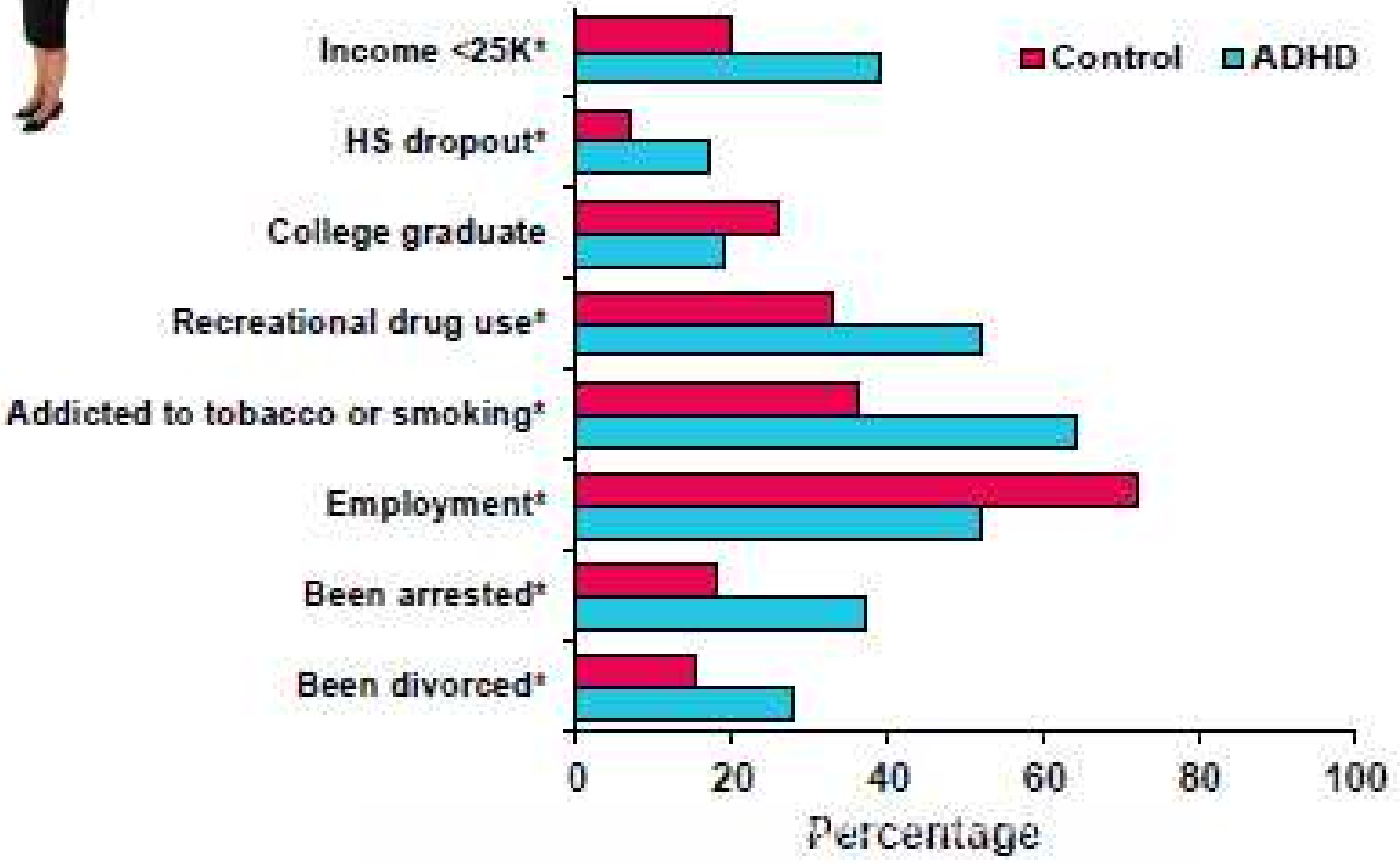
Untreated adult ADHD can have serious consequences

- Twice as likely to have been arrested
- Twice as likely to have been divorced
- Four times as likely to have contracted a sexually transmitted disease
- More likely to be addicted to tobacco with lower quit rates
- Three times more likely to be currently unemployed



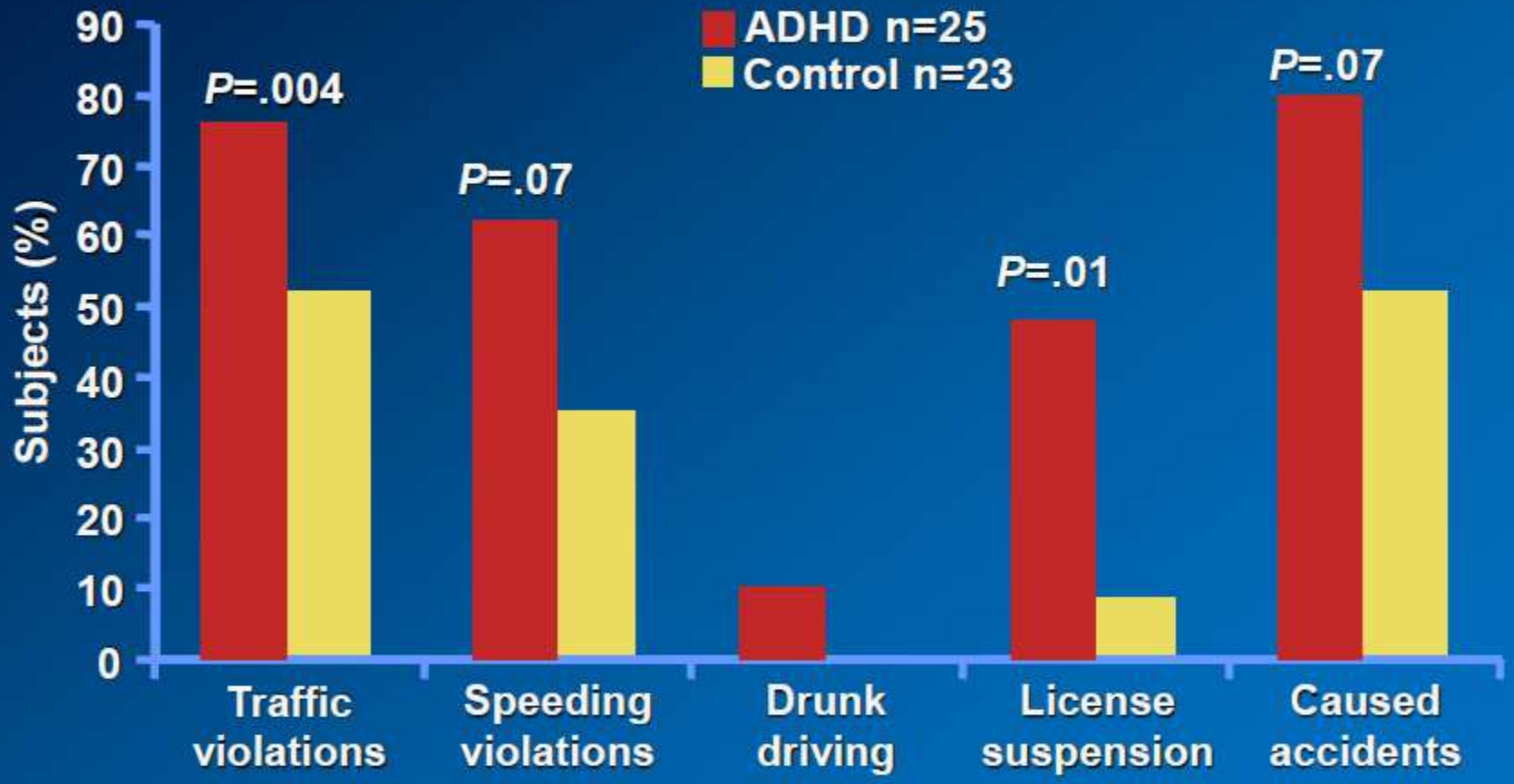
Barkley RA. *J Am Acad Child Adolesc Psychiatry.* 2006;45:192-202.

Real-Life Consequences of ADHD



Biederman J et al. *J Clin Psychiatry*. 2006;67(4):524-540; Biederman J, Faraone SV. *MedGenMed*. 2006;8(3):12.

Traffic Violations and Motor Vehicle Accidents In ADHD Adolescents + Adults



Barkley RA et al. *Pediatrics*. 1996;98:1089-1095.

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A literature review and meta-analysis on the effects of ADHD medications on functional outcomes

Heidi Boland [a] ✉, Maura DiSalvo [a] ✉, Ronna Fried [a] ✉, K. Yvonne Woodworth [a] ✉, Timothy Wilens [b] ✉, Stephen V. Faraone [c] ✉, Joseph Biederman [b] ✉

Stimulant Treated (Tx) vs. Untreated (UnTx) and Subsequent Mood Disorders

Study	Country	Total: N	ADHD: N	Age	Main Findings Tx vs. UnTx
Chang et al. 2016	Sweden	Not specified	38,752	8 – 46 yrs	Depression ↓
Lee et al. 2016	Taiwan	150,655	71,080	Mean 9.5 yrs	Depression ↓
Wang et al. 2016	Taiwan	22,800,000	144,920	All ages	Bipolar ↓
Jerrell et al. 2015	US	Not specified	22,452	Mean 7.8 yrs	Depression ↓

Stimulant Treated vs. Untreated and Subsequent Suicidality

Study	Country	Total: N	ADHD: N	Age	Main Findings Tx vs. UnTx
Liang et al 2018	Taiwan	Not specified	84,898	≤18 yrs	↓
Man et al 2017	China	Not specified	25,629	7 – 19 yrs	↓
Chen et al 2014*	Sweden	Not specified	37,936	13 – 28 yrs	↓

Periods On versus Off Stimulant Medication and Criminality

Study	Country	Total: N	ADHD: N	Age	Main Findings Tx vs. UnTx
Mohr-Jensen et al 2019	Denmark	23,826	4,231	15 – 34 yrs	↓
Lichtenstein et al. 2012*	Sweden		25,656	≥ 15 yrs	↓

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 ↓

Stimulant Treated vs. Untreated and Subsequent Traumatic Brain Injury

Study	Country	Total: N	ADHD: N	Age	Main Findings Tx vs. UnTx
Liao et al 2018	Taiwan		124, 438	≤18 yrs	↓
Liao et al 2018*	Taiwan		72,181	3 – 29 yrs	↓

Periods On vs. Off Stimulant Medication and Motor Vehicle Accidents

Study	Country	Total: N	ADHD: N	Age	Main Findings Tx vs. UnTx
Chang et al 2017*	USA		2,319,450	Mean 32.5 yrs	↓
Chang et al 2014*	Sweden		17,408	18 – 46 yrs	↓

Pharmacologic Management of ADHD

Pharmacological Treatment

Stimulants ← FDA Approved
- Methylphenidate
- Amphetamines

Noradrenergic agents ← FDA Approved
- Atomoxetine
- Viloxazine XR

Alpha Agonists ← FDA Approved
- Guanfacine (XR)
- Clonidine (XR)
- Guan XR or Clon XR + stimulants ← FDA Approved

Antidepressants
- Bupropion
- Tricyclics

Combination/others
- Modafinil
- Memantine

Wilens TE, et al. *Postgrad Med.* 2010;122(5):97-109. Newcorn & Wilens, Child AdolescPsych Clin N Am, Elsevier Press 2022. www.drugs.com

Amphetamine (AMPH) in ADHD

Medication	Starting Dose	Maximum Dose* Usual Dosing	Duration
Adderall®	2.5–5 mg QD	1.5 mg/kg/day	6 hr / BID
Adderall XR®	2.5–5 mg QD		12 hr / QD
Vyvanse®	30 mg QD		12–14 hr / QD
Mydayis®	12.5 mg QD	50/25 mg (adults/adolescents)	To 16 hr / QD
Dexedrine Tablets®	2.5–5 mg BID	1.5 mg/kg/day	3–5 hr / BID–QID
Evekeo®	2.5–5 mg BID		3–5 hr / BID–QID
Dexedrine Spansule®	5 mg QD		6 hr / QD–BID
Dyanavel® XR (suspension)	2.5–5 mg QD	1.5 mg/kg/day	13 hr / QD
Adzenys XR-ODT® (disintegrating tab)	6.3–12.5 mg QD	12.5 mg (adolescents)	12 hr / QD
Xelstrym (Patch)	4.5 mg		12 hr/ QD

*May exceed FDA approved dose.

Wilens TE, *et al*. *CNS News*. 2007. Wilens TE, *et al*. *Postgrad Med*. 2010;122(5):97-109. *Update in the Pharmacotherapy of ADHD, Child AdolescPsych Clin N Am, Newcorn& Wilens (eds), Elsevier Press*, 2022 www.drugs.com. US Food and Drug Administration. Drugs@FDA: FDA Approved Drug Products. www.accessdata.fda.gov/scripts/cder/daf/.

Methylphenidate (MPH) in ADHD

Medication	Starting Dose	Maximum Dose*	Duration
Ritalin IR®	5 mg QD/BID	2 mg/kg/day	4 hr / BID
Focalin®	2.5 mg QD/BID	1 mg/kg/day	4–5 hr / BID–TID
Focalin XR®	5 mg QD	1 mg/kg/day	10–12 hr QD
Daytrana®	10 mg		6–16 hr
Concerta®	18 mg QD	2 mg/kg/day	12 hr / once
Metadate CD®	20 mg QD		8 hr / once
Ritalin LA®	20 mg QD		8 hr / once
Quillivant XR®	<10 mg QD		12 hr / once
Quillichew ER®	<10 mg QD		8 hr / once
Cotempla XR-ODT® (disintegrating tab)	8.6 mg QD	51.8 mg	12 hr / once
Aptensio XR®	10 mg QD	2 mg/kg/day	12 hr / once
Adhansia XR®	25 mg QD		12 hr / once
Jornay PM® (delayed release)	20 mg QD	100 mg	12 hr / once
Azstarys™ (serdexMPH, MPH)	26.1/5.2 mg QD	52.3/10.4 mg	13 hr / once

*May exceed FDA approved dose.

*May exceed FDA approved dose.

Wilens TE, *et al. CNS News*. 2007. Wilens TE, *et al. Postgrad Med*. 2010;122(5):97-109. *Update in the Pharmacotherapy of ADHD, Child AdolescPsych Clin N Am, Newcorn& Wilens (eds), Elsevier Press*, 2022 www.drugs.com. US Food and Drug Administration. Drugs@FDA: FDA Approved Drug Products. www.accessdata.fda.gov/scripts/cder/daf/.

Monitoring Stimulants

- Prior to starting stimulant therapy
  - Check vital signs
  - UDS
  - Controlled medication contract
- Common side effects
  - Changes in sleep and/or appetite
  - Dry mouth
  - Headache
  - Edginess/anxiety
  - Tics
  - Psychosis
  - Tachycardia, HTN

- After starting stimulant:
  - Repeat vital signs during follow-up appointments
  - Repeat UDS on a regular basis
  - Sleep changes?
  - Appetite changes, weight loss? (should check weight along with vital signs)
  - Anxiety level, agitation?

Stimulant discontinuation symptoms:
- Changes in sleep (either increased or decreased sleep)
- Overeating, food cravings
- Depression
- Irritability
- Fatigue or jitteriness
- Vivid dreams
- In some rare cases, patients may endorse psychotic symptoms

Considerations for Stimulant Management

- Most of misuse/diversion occurs with short acting stimulants, primarily amphetamine salts
- Short-acting stimulants are not FDA-approved for use in adults
- Treatment red flag: patient that insists on using only short-acting amphetamine salt
- In general, first-line therapy should be either a non-stimulant medication or a sustained-release stimulant
- We are still struggling with stimulant shortages

Relatively new to the scene: Viloxazine (Qelbree)

- Drug class: SNRI noradrenergic inhibitor

- FDA-approved in children and adults

- Adult study- Phase III, 6-week RCT study
(Press release, Sept 2020; Nasser et al, Clin Ther 2020: 42(8):1452-1466)
N = 374 adults with ADHD
Dosing: 200 mg, 400 mg, and 600 mg
- Findings: improvement in symptoms found in doses up to 600 mg

Side effects:
- Generally good tolerability
- Most common were somnolence, decreased appetite, headache

Cons:
- Newer = More Expensive (~ $300 for a 30-day supply on GoodRx)

- Dosing per package insert:

Dosing of 100 – 400 mg daily (youth)

Can go up 600 mg (adults)

Children: start with 100 mg x 1 week, then increase to 200 mg/day
Adolescents: Start with 200 mg x 1 week, then increase to 400 mg/day
Adults: Start with 200 mg x 1 week, then 400 mg x 1 week, then 600 mg

- Other considerations:

Viloxazine is a strong CYP1A2 inhibitor, which may increase the risk of adverse reactions associated with these CYP1A2 substrates:

propranolol, clozapine, duloxetine, ramelteon, carbamazepine, lidocaine, theophylline, tizanidine, zolpidem

Non FDA-approved medications for ADHD

- Bupropion
  - RCTs in children and adults
  - Generally smaller effect size compared to stimulants
  - Use in ADHD plus depression, cigarette smoking, adjunct therapy with stimulants
  - Demonstrated efficacy with IR, SR, XL formulations

TCAs (imipramine, nortriptyline, desipramine)
- Multiple RCTs in children/adolescents and adults
- Longer term persistent effect without tolerance
- Recommend monitoring serum levels, ECG
- Use in ADHD +/- tics/Tourette Syndrome

- Memantine
  - RCT still currently underway
  - (+) RCT in adults (Mohammad Zadehet al. Human Psychoharm2019)
  - Less effective than MPH in parallel study (Iran J Psych; 2015)
  - Improvements in ADHD, executive functioning

Modafinil
- Multiple RCTs positive in children
- Failed RCTs in adults
- Careful to monitor for Stevens-Johnson Syndrome

Non-pharmacologic Management of Adult ADHD

Cognitive-Behavioral Therapy Effective in Adults with ADHD

- Group (N=88) 12-week manualized CBT group intervention designed to enhance time management, organization, and planning
- Treatment yielded significantly greater improvements in dimensional and categorical estimates of severity of ADHD symptoms compared with supportive therapy

- Individual (N=86) 12-week CBT vs relaxation in medicated, symptomatic adults with ADHD
- Treatment resulted in improved ADHD symptoms that were maintained at 6 and 12 months

SolantoMV et al. *Am J Psychiatry*. 2010;167(8):958–968. Safren SA et al. *JAMA*. 2010;304(8):875-880

Meta-Cognitive Therapy for ADHD

Session 1
Participants are oriented to:
- Methods (behavioral and cognitive-behavioral)
- Expectations (regular and punctual attendance, confidentiality)
- Program format

Sessions 2–6
Each session addresses one or more time- and task-management topics, including:
- Time awareness
- Facilitation of task initiation and completion by dismantling tasks into manageable parts
- Contingent self-reward
- Scheduling and prioritizing
- Maintaining motivation by visualizing long-term reward
- Review of traditional cognitive-behavioral therapy methods to target depressogenic and anxiogenic automatic thoughts that undermine efficient self-management

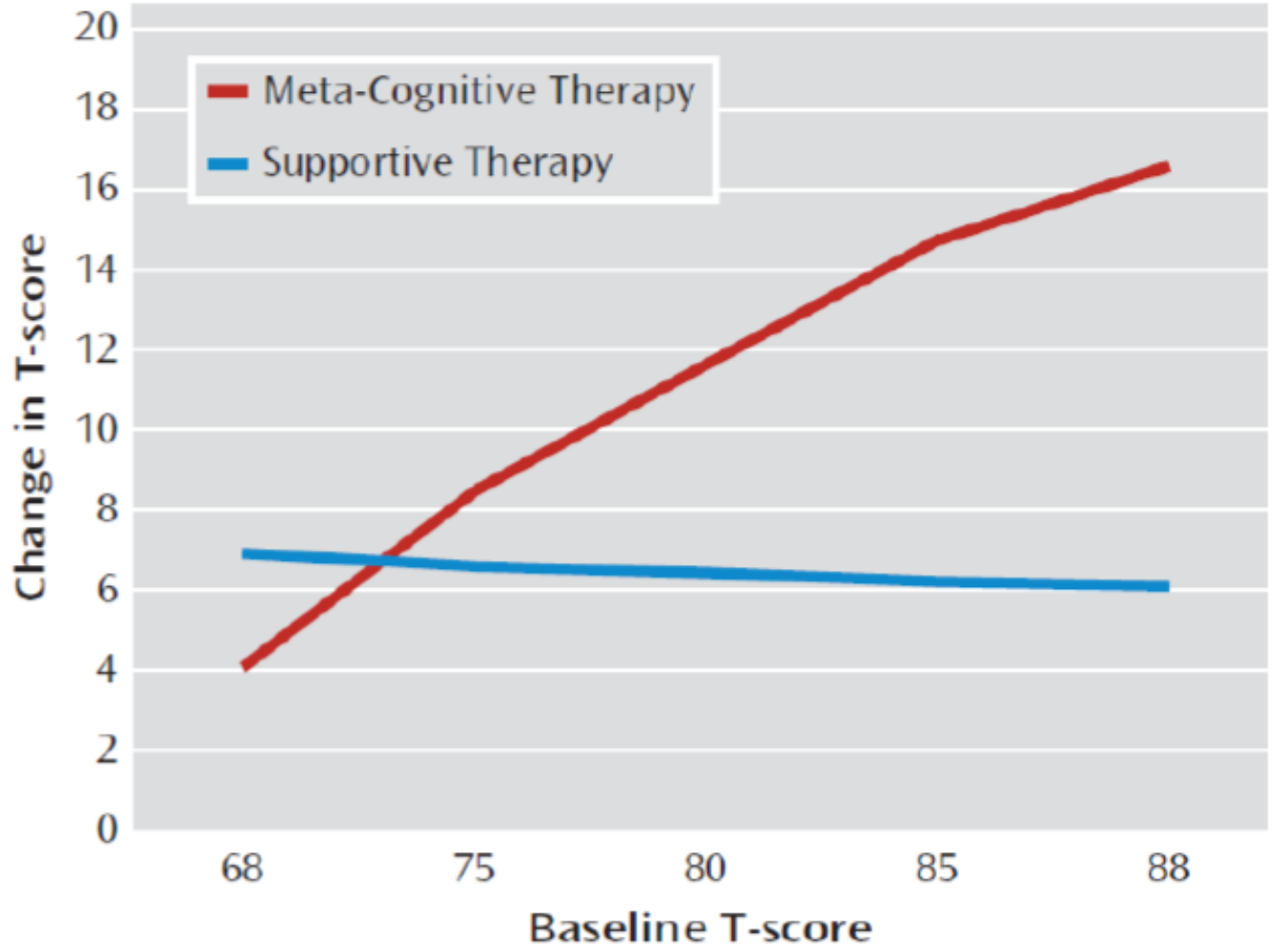
Sessions 7–9
- Implementation and maintenance of organizational systems

Sessions 10–11
- Planning, guided by flow-charting of goals and subcomponents

Session 12
- Summarize and reinforce participants' progress
- Highlight areas for continued practice/ improvement
- Provide participants with a pithy summary of strategies

Solanto M et al. AJP 2010

FIGURE 3. Change in Conners Adult ADHD Rating Scale–Self-Report Inattention/Memory Subscore as a Function of Baseline Score in a Study Comparing Meta-Cognitive Therapy and Supportive Therapy for the Treatment of ADHD



Solanto M et al. AJP 2010

NYU Grossman School of Medicine

Environmental Modifications for ADHD

- Structure environment
  - Identify and avoid distracting environments
  - Organize physical space
  - Establish centers (for bills, messages, etc)
- Establish methods for implementation
  - Structure time
  - Brief instructions
  - Create work interests
- Use external aids
  - Electronic calendars, day planners
  - Checklists
  - Task-specific devices (pill box, AirTag, etc)

Tips for Managing ADHD Symptoms Without Medications

Tips for Forgetfulness
- Set alarms as task reminders
- Set alarm to go off every 30-60 minutes
- Use visual calendars when possible
- Use whiteboards (even at home!)
- Review schedule same time each day
- Set up electronic bill payments

Tips for Restlessness
- Break up work into segments (e.g. 25 mins work, 5 min break)
- Minimize working from home if possible
- Exercise daily and break a sweat
- Break monotony w/ "Exercise snacks"
  - Sets of 20-30 push-ups
  - Wall sits
  - Planks
  - Crunches
  - Running up and down stairs
- Use a standing desk
- Use a desk treadmill if possible

Tips for Impulsivity
- Be mindful of your impulsive behaviors
- Apologize when you interrupt others
- Set rules for your online shopping
- Keep items in cart for 7 days before buying
- Discuss new big ideas with a trusted friend

Tips for Procrastination
- Break tasks into sub-tasks (and write them down!)
- Use easier tasks as "rewards" for completing harder tasks
- Reward yourself with down time (but not too much!)
- Write task deadlines on your calendar
- Make dull tasks fun
  - See how fast you can do them
  - Compete with someone else
  - Listen to music or a podcast while doing them
  - Ask someone else to work alongside or with you

Tips for Distractibility
- Minimize use of cell phone:
  - Silence notifications when possible
  - Don't bring it if you don't need it
  - Don't check it when talking to others
  - Delete non-critical & addictive apps
  - Don't keep it in your bedroom at night
- Keep your home and workspace tidy
- Keep a list of things you need to do on the internet *when you have time*
- Minimize use of video-based apps
- Establish a mindfulness practice, e.g.:
  - Daily meditation (can be just 5-10 min)
  - Breathing (xhalr.com)
  - Cyclic Sighing ("Sigh" app)

Tips for Disorganization
- Put critical items in same place every time
- "Don't put it down, put it away"
- Keep a notebook in your pocket/purse
- Invest in a high-quality scanner
- Organize house in a way that makes sense
- Set aside 5 mins/day to organize your desk

Specific Points about EXERCISE
- Increases attention span
- Improves mental focus
- Improves critical thinking skills
- Improves mood
- Improves ability to handle stress
- Enhances memory
- Reduces hyperactivity
- Decreases snacking
- Increases interest in healthy food

Compiled by
Wendi Waits, MD, DFAPA, DiplABLM

MH Insight

Tips for Decreasing Digital Tech Use

Modify your Phone
- Turn off push notifications
- Convert your screen to black & white
- Delete distracting and unproductive apps
- Set screen time and app usage limits
- Clean up your Social Media accounts (block, mute, unfollow, or delete)
- Downgrade to a "dumb" phone (especially feasible for kids)

Stop Bad Habits
- Try not to check your phone for at least 30 mins after waking up
- Put your phone away during meals & conversations
- Limit yourself to one screen at a time, e.g. watch TV or check your phone
- Make your bedroom a tech-free zone (buy an alarm clock)
- Turn your phone OFF every night and put it in a different room

Start Good Habits
- Rediscover paper books, magazines, and newspapers
- Silence your calls when you need to focus
- Schedule tech breaks (for walks, push-ups, meditation, etc)
- Eat lunch away from your desk, and leave your phone behind
- 20-20-20 rule (after 20 mins on a device, look 20 yards away for 20 seconds)
- Designate tech-free times during the day, e.g. after work, before bed, etc.
- Plan tech-free activities, e.g. exercising, camping, team sports, etc.